

ASSESSMENT REPORT

Student Assessments Maharashtra 2023-2024

Submitted to



Submitted by



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Background and objectives of the assignment

1.1. Background: Leadership For Skilled Education Foundation (branded as Leadership For Equity, LFE), is a non-profit (NGO). LFE as systems change and research advisory organisation, aims to improve the education quality of government schools in India. As part of its two-fold approach to change, LFE:

- Builds the capacity of government system leaders, and
- Influences system processes.

In partnership with the local and state education bodies, LFE co-creates programs that shift teaching-learning practices and improve student learning and well-being. This work coupled with LFE's research and advisory support to influence policies, is envisioned to create effective public education systems in India.

In Maharashtra, LFE and the Akanksha Foundation are coming together to support the Pimpri-Chinchwad Municipal Corporation (PCMC) and Nagpur Municipal Corporation (NMC), with an ambitious plan to revamp the education system into a high-performing school system for serving children from underserved communities. Supporting this project is a multi-organizational project focused on improving the quality of teaching and learning in classrooms. The project aims to enhance the learning and well-being of all children in PCMC and NMC schools.

Besides, LFE also runs a 'District Transformation Project' in six (6) districts across Maharashtra, with the goal of improving learning outcomes for lakhs of students in Zilla Parishad Schools. LFE has been closely collaborating with the stakeholders in these geographies with systems change perspective to drive process and policy level improvements, with a focus on teaching learning practices within the classroom.

In addition, LFE has been conducting academic assessments of students from Grade-1 to Grade-7 in literacy and numeracy and their Socio-Emotional Learning (SEL). The findings from the comprehensively assessment of students learning levels and their grade and competency-wise performance, are intended to aid in generating insights to identify specific needs and areas for improvement of teacher's capacities development. Thus, with specific needs identified, collaborating with the government education department to design targeted teacher professional development programs. Led by the LFE, the student assessments initiative in Maharashtra commenced in the academic year 2021-2022, followed by subsequent assessment in 2022-2023.

For academic year 2023-2024, the LFE, partnered with Insight Development Consulting Group (IDCG) for conducting students' academic assessments across six geographies/jurisdictions in Maharashtra.

1.2. Assessment Objective: The overarching objective of the assignment was to conduct student assessments in academic 2023-24 in several geographies/jurisdictions of Maharashtra, encompassing students of Grades 1-8 focusing on the assessment of their literacy and numeracy skills and socio-emotional learning (SEL).

1. Methodology adopted for the assignment.

2.1. Geographies/Jurisdictions Covered: The student assessments for academic year 2023-2024 were conducted across six geographies/jurisdictions of Maharashtra selected by the LFE, namely Chandrapur Zila Panchayat (ZP), Nagpur Municipal Corporation (NMC), Nagpur Zila Panchayat (ZP), Nashik Zila Panchayat (ZP), Pimpri Chinchwad Municipal Corporation (PCMC), and Pune Zila Panchayat (ZP). A comparison of the geographies/jurisdictions covered in academic year 2023-24, with those covered in earlier assessment rounds of 2021-22 and 2022-23, are presented in table below.

Table 1: Geographies/jurisdictions covered in 2023-24.

| # | Geographies/Jurisdictions | 2021-2022 | 2022-2023 | 2023-2024 |
|---|----------------------------|-----------|-----------|-----------|
| 1 | Pimpri Chinchwad MC (PCMC) | Yes | Yes | Yes |
| 2 | Nagpur MC (NMC) | Yes | Yes | Yes |
| 3 | Pune ZP | Yes | Yes | Yes |
| 4 | Nashik ZP | Yes | Yes | Yes |
| 5 | Nagpur ZP | No | Yes | Yes |
| 6 | Akola ZP | Yes | Yes | No |
| 7 | Chandrapur ZP | No | Yes | Yes |
| 8 | Sindhudurg ZP | No | Yes | No |
| 9 | Ahmednagar ZP | No | No | No |

For ready reference, visual of how the sample geographies/jurisdictions covered for student assessments in academic year 2023-24 were spread across Maharashtra, is presented in figure below.



Figure 1: Geographies/jurisdictions covered for student assessments in academic year 2023-24.

The geographies/jurisdiction covered across the three academic years vary. Thus, for some assessment parameters, comparative findings for three academic years, may not be available.

2.2. Grades and competencies assessed: In 2021-2022, considering the school gap during the COVID-19 pandemic, students from Grade 1 and Grade 3 were tested/assessed on 1 grade level below competencies, i.e., Balvatika and Grade 2 level competencies, respectively. The Grade 5 students were tested/assessed on competencies up to Grade 3; and the Grade 7 students were not tested/assessed in 2021-2022.

In 2022-2023, Grade 1 and Grade 3 students were tested/assessed on the competencies as per their respective grades, which also included 1 grade level below competencies. The Grade 5 students were tested/assessed on competencies up to Grade 3, like the previous year; and the Grade 7 students were tested/assessed on competencies up to Grade 5.

In 2023-224, the competency assessment strategy was same as that for 2022-23.

Across all the three assessment years, besides the Foundational Literacy and Numeracy (FLN) assessment, the Grade 6 to 8 students were also tested/assessed on Socio-Emotional Learning (SEL).

The FLN competencies measured for each grade, academic year and grade-wise, are presented in table below.

Table 2: Academic year and grade-wise competencies assessed.

| Grade | 2021-2022 | 2022-2023 | 2023-2024 |
|----------------------------|---|---|---|
| Grade 1 (FLN) | Balvatika Paper (School readiness - Balvatika Competencies) | Grade 1 Paper (incl. Balvatika competencies) | Grade 1 Paper (incl. Balvatika competencies) |
| Grade 3 (FLN) | Grade 2 Paper (Grade 1 + Grade 2 competencies) | Grade 3 Paper (Grade 2 + Grade 3 competencies) | Grade 3 Paper (Grade 2 + Grade 3 competencies) |
| Grade 5 (FLN) | Grade 5 paper (Grade 1 to 2 + Grade 3 competencies) | Grade 5 paper (Grade 1 to 2 + Grade 3 competencies) | Grade 5 paper (Grade 1 to 2 + Grade 3 competencies) |
| Grade 7 (FLN) | - | Grade 7 Paper (Grade 3 to 5 competencies) | Grade 7 Paper (Grade 3 to 5 competencies) |
| Grades 6 to 8 (SEL) | 5 Competencies (28 Items) | 6 Competencies (36 Items) | 6 Competencies (38 Items) |

2.3. Data collection instruments: The data collection instruments used for the assignment were developed by the LFE in collaboration with leading education sector institutions, which included the following:

- Grades 1, 3, and 5 instruments were developed by LFE in collaboration with the "Belief Foundation".
- Grade 7 assessment tool was developed by LFE in collaboration with the Quest (Quality Education Support Trust).
- Social-emotional Learning (SEL) was developed by LFE in collaboration with the FLAME University.

2.4. Sampling Strategy: The sampling strategy adopted the assignment, was suggested by the LFE. Matching the sampling design for the earlier two assessments, simple random sampling was adopted as the preferred method for calculating the sample size as needed for each jurisdiction. The overall process for sample selection is presented hereunder:

- School database from all sample jurisdictions/ geographies were collected from the department.
- Based on mutual conversations with Govt. Partners, blocks were identified where the study could be conducted
- Student enrolment numbers were then aggregated for the blocks and the overall sample number was then stratified as per block ratios.
- Post this, the block level stratified sample numbers were used to understand the coverage as needed in terms of number of schools to be visited to achieve the grade-wise targets.
- Schools were randomly selected from the overall school list - with the following conditions applied.
 - Each Grade should have a minimum of ten students enrolled, so that during the day of the data collection, considering factors like students being absent and other factors; more than requisite number of students are available, so that random selection can be carried out.
 - For Grade 1 and Grade 3 - thumb rule of covering maximum 10 students per school was considered to ensure higher school coverage count.
 - For Grade 5 and Grade 7 - thumb rule of covering maximum 20 students per school was considered to ensure higher school coverage count.
 - In case of non-availability of students in selected schools, some already covered schools were revisited or additional samples of students were covered from the other selected schools of the same geography/jurisdiction; to meet sample targets/deadlines as set.

A snapshot comparison of academic year, geography/jurisdiction and grade-wise sample covered is presented in table below.

Table 3: Overall sample comparison for all three assessment years

| Jurisdiction / Year | Grade 1 | | | Grade 3 | | | Grade 5 | | | Grade 7 | | SEL (6 to 8) | | |
|---------------------|------------|--------------|---------------|------------|---------------|--------------|------------|----------------|---------------|-------------|--------------|--------------|----------------|---------------|
| | AY 21-22 | AY 22-23 | AY 23-24 | AY 21-22 | AY 22-23 | AY 23-24 | AY 21-22 | AY 22-23 | AY 23-24 | AY 22-23 | AY 23-24 | AY 21-22 | AY 22-23 | AY 23-24 |
| Nashik-ZP | 151 | 199 (32%) | 265 (33%) | 157 | 210 (+34%) | 278 (32%) | 88 | 201 (+128%) | 532 (165%) | 424 | 540 (27%) | 388 | 426 (+10%) | 420 (-1%) |
| Akola-ZP | 133 | 146 (10%) | - | 157 | 160 (+2%) | - | 102 | 201 (+97%) | - | 400 | - | 387 | 405 (+5%) | - |
| Pune-ZP | 143 | 202 (41%) | 274 (36%) | 167 | 204 (22%) | 274 (34%) | 100 | 216 (+116%) | 578 (168%) | 388 | 580 (49%) | 418 | 420 (+0.5%) | 458 (9%) |
| Chandrapur-ZP | - | 210 | 214 (2%) | - | 212 | 210 (-1%) | - | 214 | 407 (90%) | 418 | 411 (-2%) | - | 444 | 410 (-8%) |
| Sindhudurg-ZP | - | 91 | - | - | 89 | - | - | 186 | - | 344 | - | - | 504 | - |
| Nagpur-ZP | - | 152 | 270 (78%) | - | 143 | 272 (90%) | - | 210 | 484 (130%) | 448 | 521 (16%) | - | 539 (+73%) | 419 (-12%) |
| PCMC | 112 | 206 (84%) | 201 (-2%) | 144 | 207 (+44%) | 200 (-3%) | 150 | 211 (+41%) | 468 (122%) | 400 | 464 (16%) | 399 | 402 (+1%) | 400 (0%) |
| Nagpur MC | 105 | 193 (84%) | 153 (-21%) | 86 | 139 (+62%) | 193 (39%) | 89 | 180 (+102%) | 158 (-12%) | 171 | 193 (13%) | 314 | 435 (+39%) | 369 (-15%) |
| TOTAL | 644 | 1399 | 1377 | 711 | 1364 | 1427 | 529 | 1619 | 2627 | 2993 | 2709 | 1906 | 3575 | 2476 |

2.5. Data collection strategy: IDCG hosted the orientation session of the data collection teams in Pune from January 29th to January 31st, 2024. The field team members were recruited by IDCG, and their training was led by the LFE. The LFE also provided the field team members with requisite kits for conducting the student assessments.

- The Grade 1 and 3 assessments were conducted on one-to-one basis, that is, 1 student at a time.
- The Grades 5 and 7 assessments and SEL (Grades 6 to 8) were conducted on one-to-many basis.
- Assessments were first conducted using hard copies. Thereafter, the hard copy data was entered using CAPI devices for analysis.
- A Marathi language CAPI application was developed to collect/record and upload the assessment data.
- The student responses were scored to calculate the assessment/achievement scores, as per the scoring protocols suggested by the LFE.

2. Grade-wise Results and Discussions

3.1. Grade 1

The Grade-1 schedule had two major sections, namely:

- Balvatika literacy and numeracy, and
- Overall Foundational Literacy and Numeracy (FLN).

As the data collection instrument for Grade-1 was revised in 2022-23, while the Balvatika data is available for all three years, but the overall FLN data is available only for two years (2022-23 and 2023-24). The insights emerging from Balvatika analysis are for the common jurisdictions covered in last three assessment years, i.e., for Nashik ZP, Pune ZP, PCMC and Nagpur MC. However, *the data for assessment year 2023-24 has been analysed for the six jurisdictions covered in the year.*

Balvatika

Change in Balvatika literacy and numeracy outcomes over last three assessment years.

The learning levels of Grade-1 students has witnessed an increase from academic year 2021-2022 to 2023-24. The overall score of students has increased from 67% in 2021-22 to 80% in 2022-23; to 76% in 2023-24. The change is significant¹ between 2021-22 and 2023-24, *indicating an improvement in Balvatika competencies over the last three assessment years.*

Component-wise:

- Balvatika literacy score increased from 52% in 2021-2022 to 66% in 2022-23; but witnessed a decline to 60% in 2023-24. *However, the improvement between 2021-22 to 2023-24 is significant².*
- Balvatika numeracy score increased from 81% in 2021-2022 to 92% in 2022-23; and remained almost the same (91%) in 2023-24. *However, the improvement in student achievement from 2021-22 to 2023-24 is significant³.*

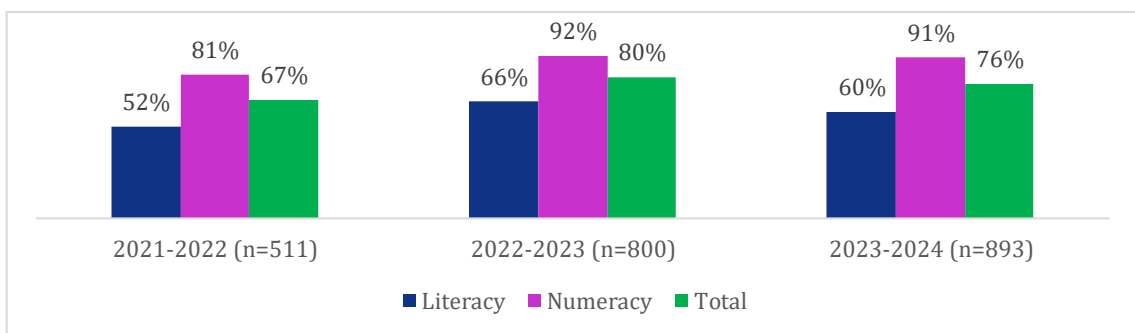


Figure 2: Change in Balvatika competencies over last three assessment years.

Change in Balvatika literacy sub- competency score over last three assessment years

When achievement on Balvatika literacy competencies are analysed across all three assessment years, there is an observed decrease in the outcomes from 2022-23 to 2023-24.

- As regards oral language development (मुलाची बोली), the average score of students was 54% in 2021-2022, which decreased to 48% in 2022-2023, but increased to 49% in 2023-2024. *There*

1 value of z is -3.6431. The value of p is .00028. The result is significant at $p < .05$. (Two-tailed)

2 value of z is -2.9139. The value of p is .00362. The result is significant at $p < .05$. (Two-tailed)

3 value of z is -5.4254. The value of p is $< .00001$. The result is significant at $p < .05$. (two-tailed)

is a significant⁴ decline in student achievement between 2021–22 and 2023–24. Thus, indicating that 'oral language development' is an aspect, which needs specific emphasis for Grade 1 students.

- As regards the self-expression (लेखी अभिव्यक्ती), the students' average score was 34% in 2021-2022, which increased to 57% in 2022-2023, but witnessed a dip to 42% in 2023-2024. Though there is significant increase⁵ when scores from 2021-22 are compared with 2023-24, but there is a decrease when the score of 2022-23 are compared with 2023-24. Thus, it emerges that 'self-expression; is an aspect, which needs specific emphasis for Grade-1 students.
- In listening comprehension (ऐकून आकलन), the students' average score was 46% in 2021-2022, which increased to 98% in 2022-2023, and remained the same (98%) in 2023-2024. Here also, while there is significant⁶ increase when scores from 2021-22 are compared with 2023-24, but there is no change when the score of 2022-23 are compared with 2023-24. Thus, 'listening comprehension' is also an aspect, which needs specific emphasis for Grade-1 students.
- As for the working with books (पुस्तका सोबत काम), the students' average score was 82% in 2021-2022, which increased to 91% in 2022-2023; but witnessed a dip to 87% in 2023-2024. Here again, while there is significant⁷ increase when scores from 2021-22 are compared with 2023-24, but there is a decrease when the score of 2022-23 are compared with 2023-24. Thus, 'working with books' is also an aspect, which needs specific emphasis for Grade-1 students.

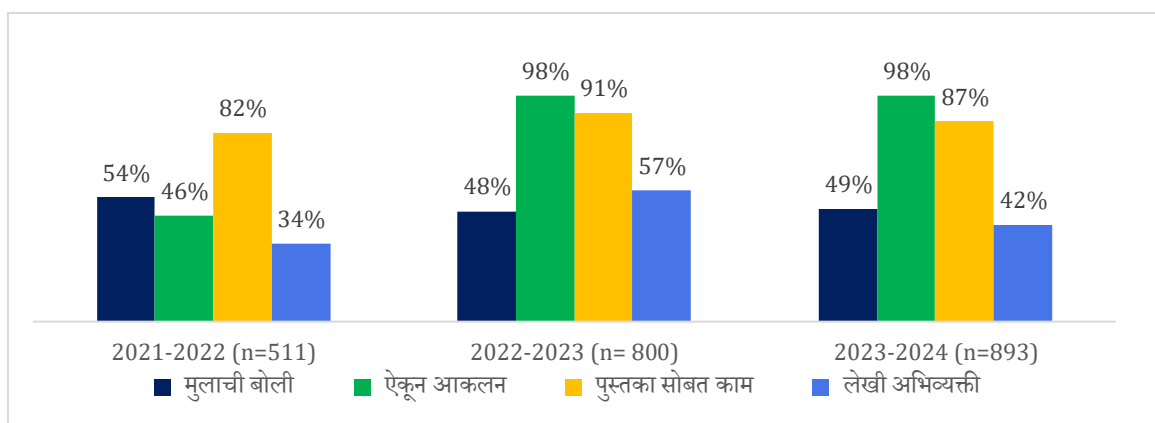


Figure 3: Students scores in Balvatika literacy sub-competencies over last three assessment years.

Change in Balvatika numeracy sub-competency score over last three assessment years

Here also, when achievement on Balvatika literacy competencies are analysed across all three assessment years, there is an observed decrease in the outcomes.

- The students' average score in calculating complement (गणन पूरक) was 86% in 2021-2022, which increased to 89% in 2022-2023, and stayed the same 89% in 2023-2024. Though there is an improvement in student achievement between 2021-22 to 2023-24⁸, the analysis indicates that that 'calculating complement is an aspect, which needs specific emphasis for Grade 1 students.
- Similarly, in numerology (संख्याद्यान), the students' average score was 70% in 2021-2022, which increased to 97% in 2022-2023, and remained almost the same 96% in 2023-2024.

4 value of z is 1.8031. The value of p is .07186. The result is not significant at $p < .05$. (Two-Tailed)

5 value of z is -2.9558. The value of p is .00308. The result is significant at $p < .05$. (Two-Tailed)

6 value of z is -23.0461. The value of p is $< .00001$. The result is significant at $p < .05$. (Two-Tailed)

7 value of z is -2.5371. The value of p is .01108. The result is significant at $p < .05$. (Two-Tailed)

8 value of z is -1.6589. The value of p is .09692. The result is not significant at $p < .05$. (Two-tailed)

Thus, while there is a significant improvement from 2021-22 to 2023-24⁹, but an unchanged performance from 2022-23 to 2023-24. Thus, this numeracy sub-competency also needs specific emphasis for Grade 1 students.

- Likewise, in Addition- subtractions (बेरीज वजाबाकी), the students' average score was 83% in 2021-2022, which increased to 92% in 2022-2023, and further increased to 93% in 2023-2024. *The improvement in student achievement between 2021-22 to 2023-24 is significant¹⁰.*
- In Shapes (आकृतिबंध), the students' average score was 89% in 2021-2022, which increased to 94% in 2022-2023, but witnessed a dip to 90% in 2023-2024. *Thus, indicating that 'आकृतिबंध' is an aspect of Balvatika numeracy, which needs emphasis for Grade-1 students. Despite the improvement¹¹ in student achievement between 2021-22 to 2023-24, this numeracy sub-competency needs specific emphasis for Grade 1 students..*

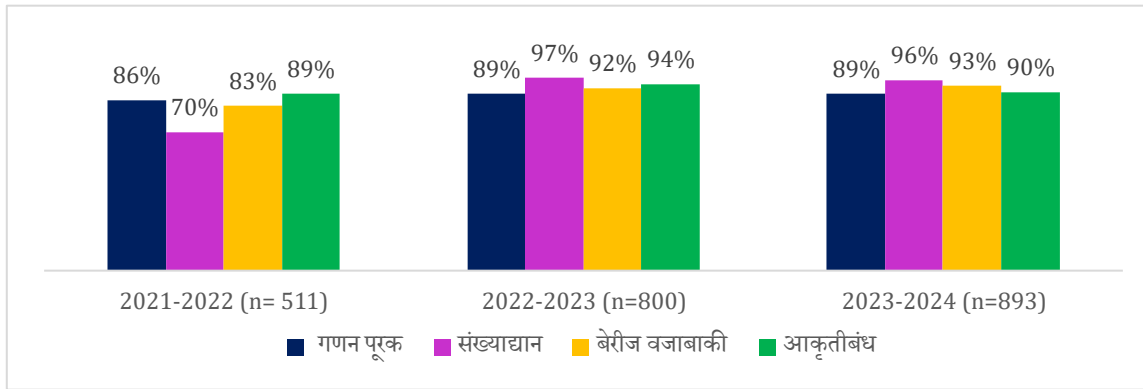


Figure 4: Student scores in Balvatika numeracy sub-competencies over last three assessment years.

Overall Foundational Literacy and Numeracy (FLN)

The insights presented below for overall foundational literacy and numeracy (FLN) outcomes are for last two assessment years for the common jurisdictions, i.e., Pune ZP, PCMC, Nagpur ZP, NMC, Nashik ZP and Chandrapur ZP.

Change in foundational literacy and numeracy (FLN) outcomes over last two assessment years

As regards the overall FLN outcomes, the scores have witnessed a dip from 73% in 2022-2023 to 71% in 2023-24¹². Though, minor, this decrease, highlights the need of laying emphasis on both, literacy and numeracy aspects of FLN.

Component-wise:

- Overall literacy score has decreased from 65% in 2022-23 to 62% in 2023-24¹³.
- Overall numeracy score has decreased from 82% in 2022-23 to 81% in 2023-24¹⁴.

9 value of z is -13.7327. The value of p is < .00001. The result is significant at p < .05.(two-tailed)

10 value of z is -5.8468. The value of p is < .00001. The result is significant at p < .05. (two-tailed)

11 value of z is -0.5915. The value of p is .5552. The result is not significant at p < .05. (two-tailed)

12 value of z is 1.1172. The value of p is .26272. The result is not significant at p < .05. (two-tailed).

13 value of z is 1.5632. The value of p is .11876. The result is not significant at p < .05.(two-tailed)

14 value of z is 0.6459. The value of p is .5157. The result is not significant at p < .05.(two-tailed)

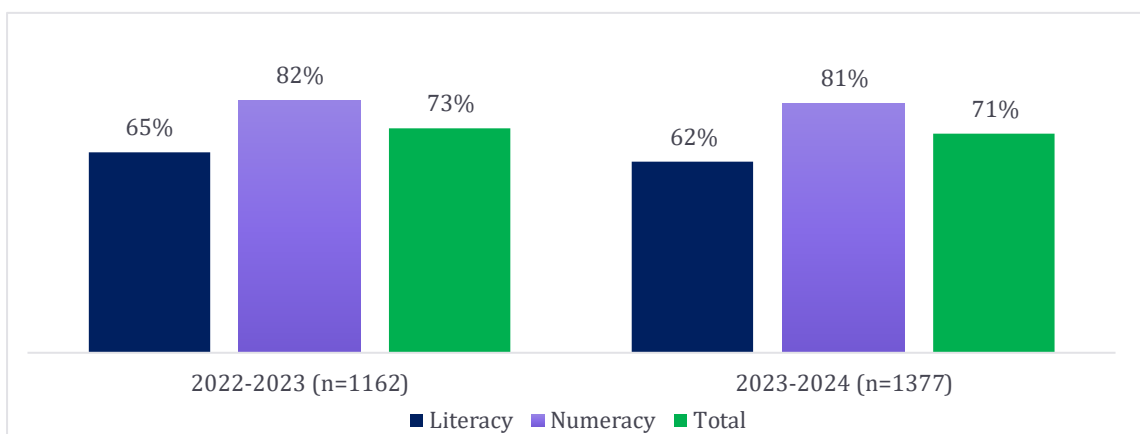


Figure 5: Change in foundational literacy and numeracy outcomes over last two assessment years.

Composite numeracy and literacy scores 2023-2024

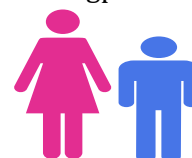
Overall, in 2023-24, 31% Grade-1 students (33% female and 28% male) achieved a composite score in the range of 80% to 100%. This is followed by 46% students (43% female and 48% male), who scored in the range of 60% to 80%. Thus, indicating that a majority (77%) students scored between the range of 60% to 100%. Further, about 24% students scored between 0% to 60%, with only a miniscule 2% students scoring 30% or less (Figure below).

Geography/jurisdiction-wise:

- The highest performing geography (students having score between 80% to 100%) was Pune ZP, and comparatively the lowest performing one were Nagpur MC and Nagpur ZP.

Gender-wise:

- The best performance of the female students (those who score in the range of 80% to 100%) was found in Pune ZP (65%); and the lowest performance were found in Nagpur MC (13%) and Nagpur ZP (15%).
- The best performance of the male students (those who score in the range of 80% to 100%) was also found in Pune ZP (72%); and the lowest performance were found in Nagpur MC (10%) and Nagpur ZP (9%).
- Comparatively, across all geographies/jurisdiction, the female students (33%) performed better or at par than the male students (28%) (achieved a composite score in the range of 80% to 100%).



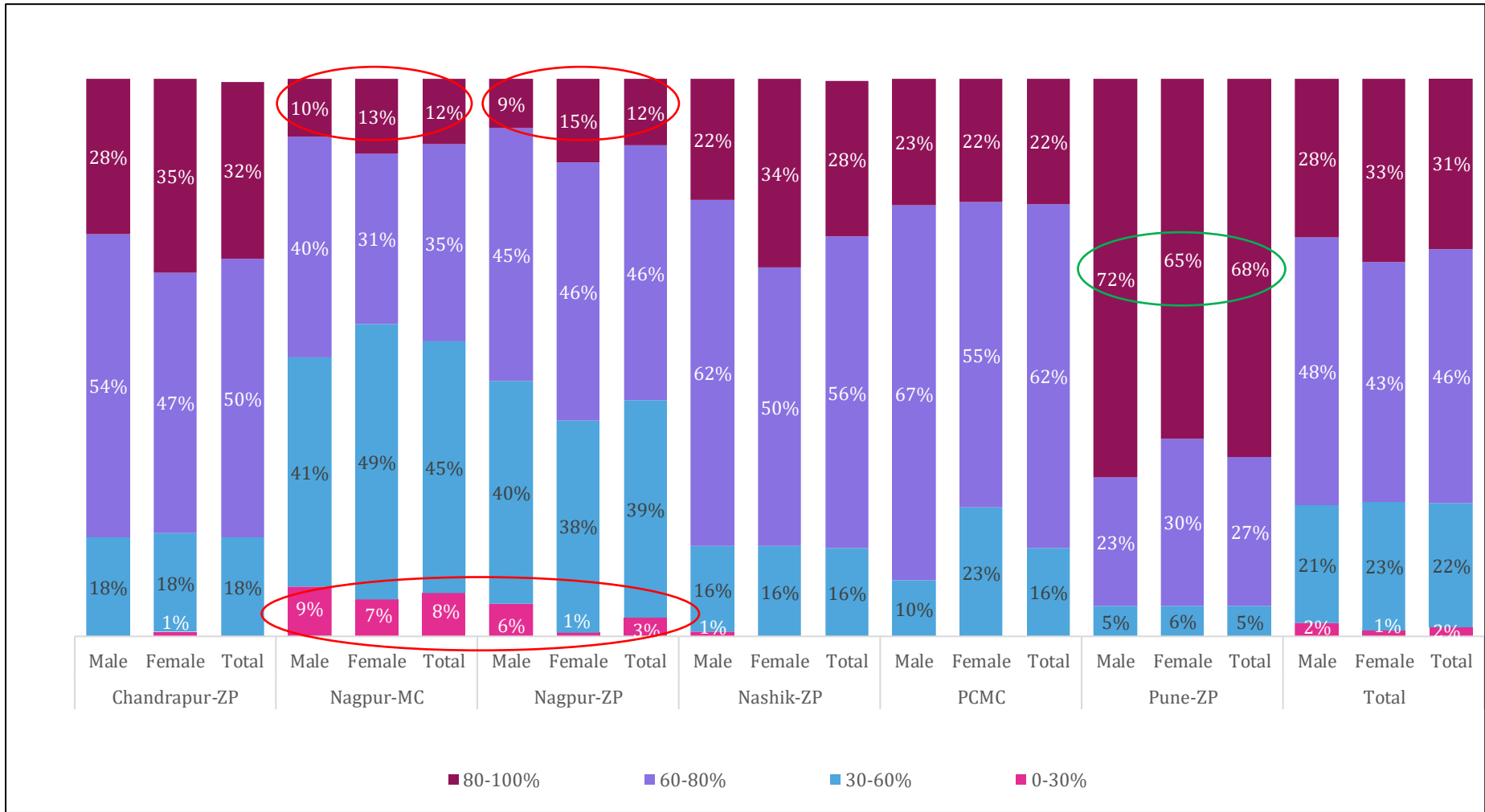


Figure 6: Composite Grade-1 FLN outcomes 2023-2024.

Change in composite literacy and numeracy scores over last two assessment years.

When compared across two years (2022-23 and 2023-24), the proportion of students compositely scoring (literacy and numeracy together) in the range of 80% to 100%, witnessed a significant dip from 21% in 2022-23 to 13% in 2023-24¹⁵.

Component-wise:

- In literacy outcomes, the proportion of students scoring in the range of 80% to 100%, witnessed a significant dip from 22% in 2022-23 to 15% in 2023-24¹⁶.
- In numeracy outcomes, the proportion of students scoring in the range of 80% to 100%, witnessed a significant¹⁷dip from 60% in 2022-23 to 55% in 2023-24.

Table 4: Students composite score in Literacy and Numeracy across 2022-23 and 2023-24

| Component/Score Ranges/Year | | | Numeracy | | | | | | | |
|-----------------------------|---------|---------|----------|---------|---------|---------|-----------|----------|-----------|----------|
| | | | 0-30% | | 30-60% | | 60-80% | | 80-100% | |
| | | | 2022-23 | 2023-24 | 2022-23 | 2023-24 | 2022-23 | 2023-24 | 2022-23 | 2023-24 |
| Literacy | 0-30% | 2022-23 | 10 (1%) | | 32 (3%) | | 26 (2%) | | 2 (0%) | |
| | | 2023-24 | | 12 (1%) | | 51 (4%) | | 50(4%) | | 5(0%) |
| | 30-60% | 2022-23 | 0 (0%) | | 52 (4%) | | 189(16%) | | 120(10%) | |
| | | 2023-24 | | 3(0%) | | 58(4%) | | 248(18%) | | 124(9%) |
| | 60-80% | 2022-23 | 0 (0%) | | 3 (0%) | | 132 (11%) | | 336 (29%) | |
| | | 2023-24 | | 0(0%) | | 9(1%) | | 160(12%) | | 457(33%) |
| | 80-100% | 2022-23 | 0 (0%) | | 0 (0%) | | 20 (2%) | | 240 (21%) | |
| | | 2023-24 | | 0(0%) | | 0(0%) | | 23(2%) | | 177(13%) |

15 value of z is 5.3895. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

16 value of z is 4.554. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

17 value of z is 2.5375. The value of p is .01108. The result is significant at p < .05. (Two-tailed)

Change in literacy sub-competencies score over last two assessment years.

The insights emerging from comparison of literacy competencies scores for last two assessment years 2022-23 and 2023-24, are presented below:

- As regards oral language development (मुलाची बोली), the average score of students remained the same (43%) from 2022-2023 to 2023-2024¹⁸.
- In listening comprehension (ऐकून आकलन), the students average score has a minor increase from 80% in 2022-2023 to 81% in 2023-2024¹⁹.
- For working with books (पुस्तका सोबत काम), the students average score has improved from 65% in 2022-2023 to 68% in 2023-2024²⁰.
- In reading comprehension (वाचन), the students' average score has witnessed a minor increase from 72% in 2022-2023 to 73% in 2023-2024²¹.
- As for decoding (लिपी परिचय), the students average score has witnessed a minor decrease from 89% in 2022-2023 to 88% in 2023-2024²².
- However, unlike other competencies, the students' average score for self-expression (लेखी अभिव्यक्ती), has witnessed a *significant*²³ dip from 55% in 2022-2023 to 43% in 2023-2024. Thus, it emerges that 'self-expression' literacy sub-competency, is an aspect, which needs specific emphasis for Grade-1 students.

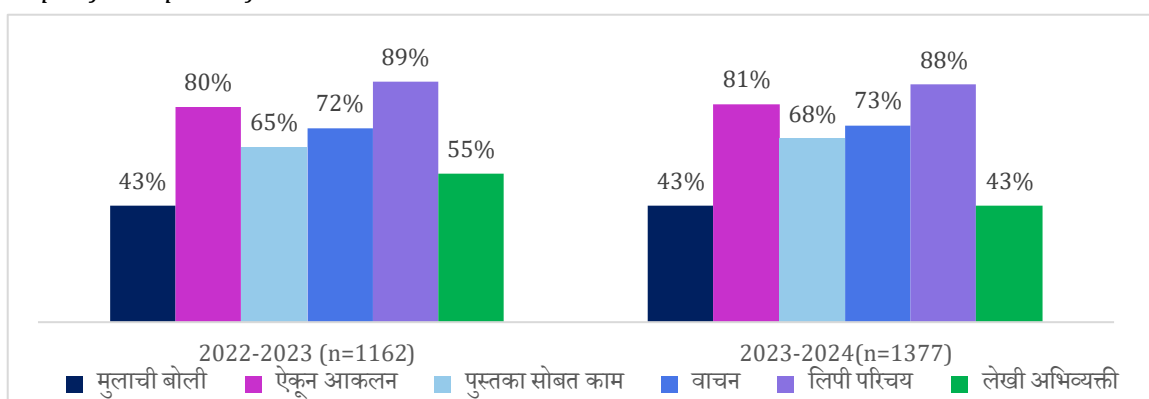


Figure 7: Student scores in literacy competencies over last two assessment years.

Literacy competency score - jurisdictions and gender wise

The geography/jurisdiction-wise analysis of 2023-24 data for literacy competencies, brings to fore that Pune ZP fares the best with an average score of 76%. Comparatively, the lowest performing geography/jurisdiction- is Nagpur MC with average score of 49%.

Gender-wise:

- The geography/jurisdiction where the female students scored the highest is Pune ZP, where the average score of female students was 75%. The lowest performing geography/jurisdiction in this regard was found to be Nagpur MC, where the average score of female students was 49%.

18 value of z is 0. The value of p is 1. The result is not significant at $p < .05$. (Two-tailed)

19 value of z is -0.6341. The value of p is .5287. The result is not significant at $p < .05$. (Two-tailed)

20 value of z is -1.5971. The value of p is .1096. The result is not significant at $p < .05$. (Two-tailed)

21 value of z is -0.5625. The value of p is .57548. The result is not significant at $p < .05$. (Two-tailed)

22 value of z is 0.7856. The value of p is .42952. The result is not significant at $p < .05$. (Two-tailed)

23 value of z is 6.0276. The value of p is $< .00001$. The result is significant at $p < .05$. (Two-tailed)

- The geography/jurisdiction where the male students scored the highest is also the Pune ZP, where the average score of male students was 77%. The lowest performing geography/jurisdiction in this regard was found Nagpur MC, where the average score of male students was 48%.
- At an aggregate, the female students (63%) comparatively performed a little better than the male students (61%) in literacy competency²⁴.

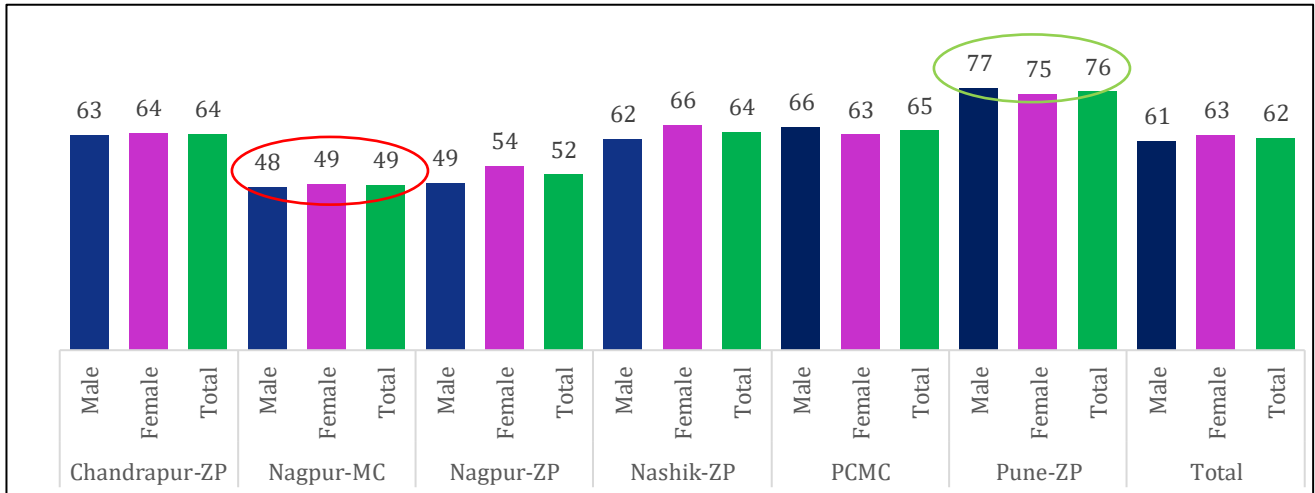
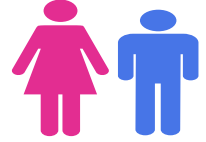


Figure 8: Literacy competency score- jurisdiction & gender wise 2023-2024

Students' scores in literacy sub-competencies in 2023-2024

The analysis of scores for literacy sub-competencies, highlights that the students excelled the most in following sub-competencies:

- Decoding (लिपी परिचय), where 71% students scored between 80-100%.
- Reading comprehension (वाचन) and working with books (पुस्तका सोबत काम), where 66% and 45% students, respectively scored between 80% to 100%.

However, a significant portion of students faced challenges in following sub-competencies, which need specific emphasis going forward:

- Oral language development (मुलाची बोली), where only 12% students scored between 80% to 100%.
- Writing for self-expression (लेखी अभिव्यक्ती), where only 11% students scored between 80% to 100%.

Table 5: Grade-1 students' scores in literacy competencies for 2023-24

| Competency | 0-30% | 30-60% | 60-80% | 80-100% |
|------------------|-------|--------|--------|---------|
| मुलाची बोली | 30% | 40% | 18% | 12% |
| ऐकून आकलन | 6% | 17% | 16% | 61% |
| पुस्तका सोबत काम | 4% | 27% | 24% | 45% |
| वाचन | 19% | 10% | 6% | 66% |
| लिपी परिचय | 5% | 8% | 16% | 71% |
| लेखी अभिव्यक्ती | 35% | 37% | 17% | 11% |

²⁴ value of z is 1.0339. The value of p is .30302. The result is not significant at $p < .05$. (Two-tailed)

Change in numeracy sub-competencies score over last two assessment years.

The insights emerging from comparison of numeracy competencies scores for last two assessment years, are presented below:

- As regards the calculating complement (गणन पूरक), the students' average score has witnessed a minor increase from 86% in 2022-2023 to 87% in 2023-2024²⁵.
- In numerology (संख्याद्यान), the students' average score has however, significantly²⁶ decreased from 64% in 2022-2023, to 59% in 2023-2024. Thus, indicating that 'numerology' is an aspect, which needs specific emphasis for Grade-1 students.
- As for Addition- subtractions (बेरीज वजाबाकी), the students average score has witnessed a minor increase from 89% in 2022-2023 to 90% 2023-2024²⁷.
- Regarding the Shapes (आकृतिबन्ध) competency, the students' average score has decreased significantly²⁸ from 92% in 2022-2023, to 90% in 2023-2024. Thus, indicating that Shapes is an aspect, which needs specific emphasis for Grade-1 students.
- As regards Geometry (भूमिती-त्रिमितीय आकार), the students' average score the average score of students has increased from 94% in 2022-2023 to 96% in 2023-2024²⁹.

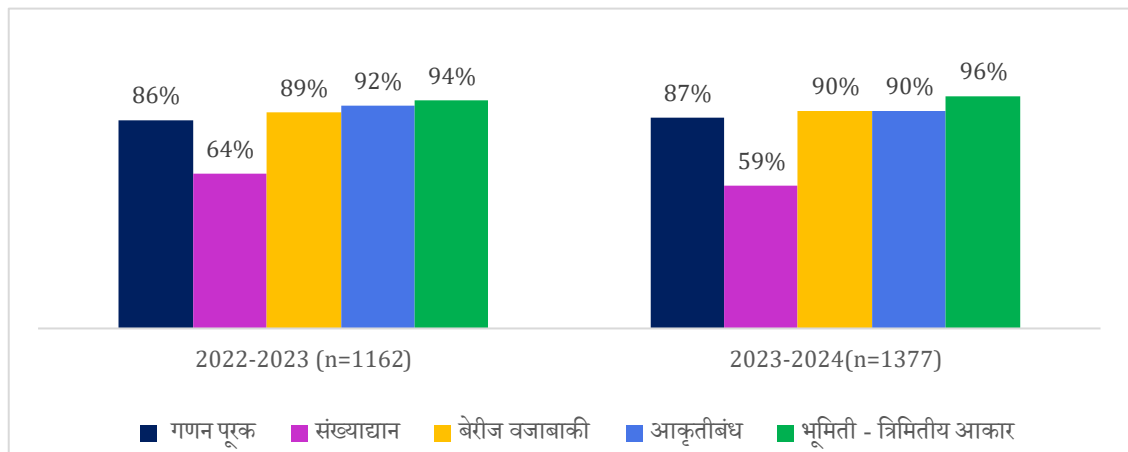


Figure 9: Student scores in numeracy competencies over last two assessment years.

Numeracy competency score jurisdictions and gender-wise

The geography/jurisdiction-wise analysis of 2023-24 data for numeracy competencies, brings to fore that:

- Pune ZP fares the best with an average score of students being 91%.
- Comparatively, the lowest performing geography/jurisdiction is Nagpur MC with average score of students being 71%.

Gender-wise:

- The geography/jurisdiction where the female students scored the highest is Pune ZP, where the average score of female students was 91%. The lowest performing geography/jurisdiction in this regard was found to be Nagpur MC, where the average score of female students was 71%.

25 value of z is -0.7356. The value of p is .4593. The result is not significant at $p < .05$. (two-tailed)

26 value of z is 2.5769. The value of p is .00988. The result is significant at $p < .05$. (two-tailed)

27 value of z is -0.8204. The value of p is .41222. The result is not significant at $p < .05$. (two-tailed)

28 value of z is 0. The value of p is 1. The result is not significant at $p < .05$. (two-tailed)

29 value of z is -2.3224. The value of p is .02034. The result is significant at $p < .05$. (two-tailed)

- The geography/jurisdiction where the male students scored the highest is also the Pune ZP, where the average score of male students was 92%. The lowest performing geography/jurisdiction in this regard also was found to be Nagpur MC, where the average score of male students was 71%.
- At an aggregate, comparatively across all geographies/jurisdictions, the female students performed the same as male students³⁰.

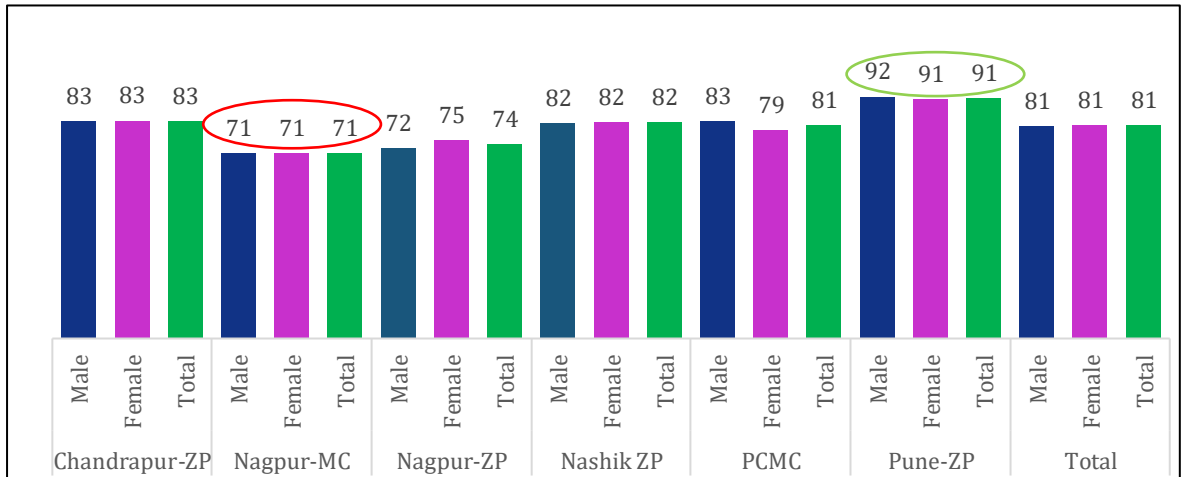
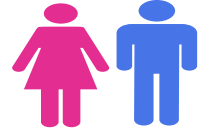


Figure 10: Numeracy competency jurisdiction & gender wise 2023-2024

Students' scores in numeracy sub-competencies in 2023-2024

The analysis of scores for numeracy sub-competencies, highlights that the students excelled the most in following sub-competencies:

- Geometry (भूमिती - त्रिमितीय आकार), where 93% students scored between 80% to 100%.
- Addition-Subtractions (बेरीज वजाबाकी) and Shape (आकृतिबंध), where 85% and 81% students, respectively scored between 80% to 100%.
- Calculating complement (गणन पूरक), where 74% students scored between 80% to 100%.

However, a large proportion of students faced challenges in following numeracy sub-competency:

- Numerology (संख्याद्यान), where only 19% students scored between 80% to 100%. Thus, indicating that, this sub competency needs specific emphasis going forward.

Table 6: Grade-1 students' scores in literacy competencies for 2023-24

| Competency | 0-30% | 30-60% | 60-80% | 80-100% |
|-------------------------|-------|--------|--------|---------|
| गणन पूरक | 1% | 11% | 13% | 74% |
| भूमिती - त्रिमितीय आकार | 1% | 5% | 0% | 93% |
| संख्याद्यान | 8% | 55% | 18% | 19% |
| बेरीज - वजाबाकी | 2% | 5% | 8% | 85% |
| आकृतिबंध | 6% | 6% | 7% | 81% |

³⁰ value of z is 0. The value of p is 1. The result is not significant at $p < .05$. (Two-tailed)

3.2. Grade 3

The Grade-3 schedule had two major sections, namely:

- Grade 2 level literacy and numeracy, and
- Overall Foundational Literacy and Numeracy (FLN).

As the data collection instrument for Grade-3 was revised in 2022-23, while the Grade 2 level data is available for all three years, but overall FLN data is available only for two years (2022-23 and 2023-24).

The Grade 2 level analysis presented below is for last three assessment years for the common jurisdictions, i.e., Nashik ZP, Pune ZP, PCMC and Nagpur MC. However, *the data for assessment year 2023-24 has been analysed for the six jurisdictions covered in the year.*

Grade 2 level Competencies

Change in Grade 2 level competency outcomes over last three assessment years.

The overall learning level scores of Grade-3 students has witnessed a significant³¹ increase from 50% in 2021-22 to 62% in 2022-23; and further to 65% in 2023-24.

Component-wise

- Grade 2 level literacy score has increased from 46% in 2021-2022 to 54% in 2022-23, and further to 55% in 2023-24. The improvement from 2021-22 to 2023-24 is significant³².
- Grade 2 level numeracy score has increased from 54% in 2021-2022 to 69% in 2022-23, and further to 74% in 2023-24. The improvement from 2021-22 to 2023-24 is significant³³.

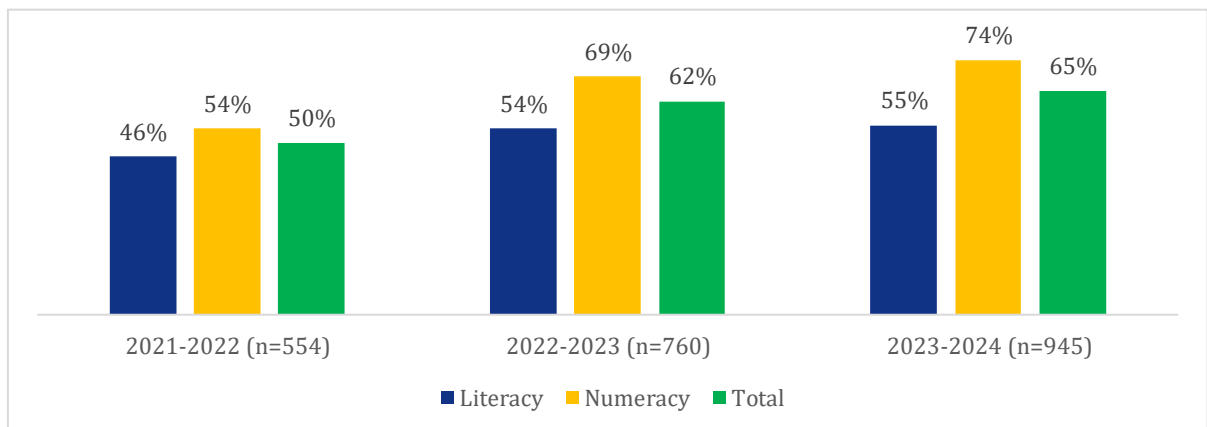


Figure 11: Change in grade 2 competency over last three assessment years.

Change in Grade 2 level literacy sub-competencies score over last three assessment years.

When Grade-2 level literacy sub-competencies achievement are analysed across the last three assessment years, there is an observed increase in outcomes from 2021-22 to 2023-24.

31 value of z is -5.7095. The value of p is < .00001. The result is significant at p < .05. (two-tailed)

32 value of z is -3.3658. The value of p is .00076. The result is significant at p < .05. (two-tailed)

33 value of z is -7.9253. The value of p is < .00001. The result is significant at p < .05. (two-tailed)

- As regards Functional grammar and punctuation (कार्यात्मक व्याकरण व विरामचिन्हे), the average score of students was 55% in 2021-2022, which decreased to 52% in 2022-2023, but increased to 58% in 2023-2024³⁴.
- As regards working with books (पुस्तका सोबत काम), the students' average score was 51% in 2021-2022, which increased to 70% in 2022-2023, remained almost the same (69%) in 2023-24. The improvement from 2021-22 to 2023-24 is significant³⁵.
- In reading comprehension (वाचून आकलन) the students' average score was 48% in 2021-2022, which increased to 59% in 2022-2023 and further increased to 62% in 2023-2024. Thus, indicating a significant improvement from 2021-22 to 2023-24³⁶. *The students have excelled the most in this literacy sub-competency.*
- In self-expression (लेखी अभिव्यक्ती), the students' average score was 36% in 2021-2022, which increased to 41% in 2022-2023, by witnessed a dip to 41% in 2023-2024. Despite the improvement when scores from 2021-22 are compared with 2023-24³⁷, there is a decrease in 2023-24 from 2022-23. *Thus, it emerges that going forward, 'self-expression; is an aspect, which needs specific emphasis for Grade-3 students.*

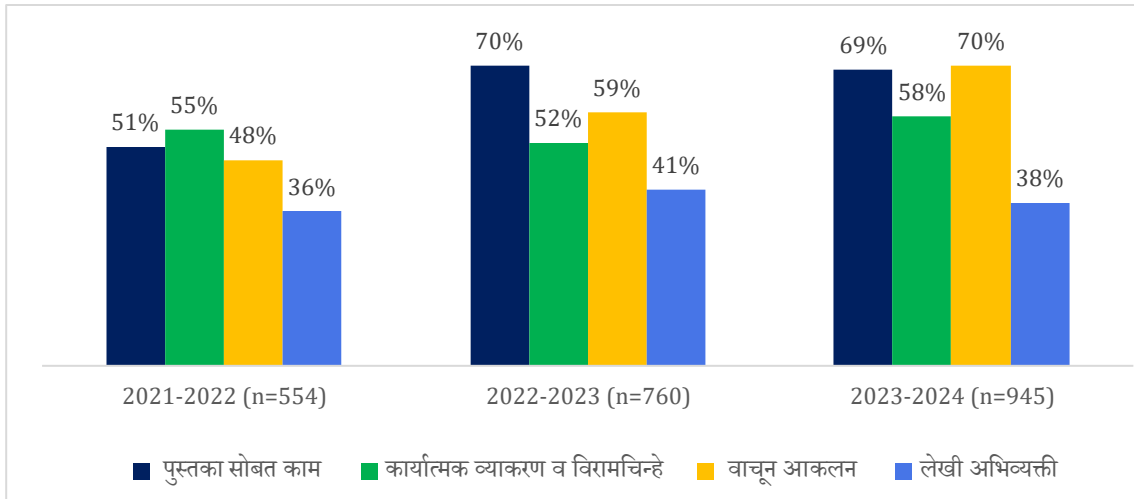


Figure 12: Change in Grade 2 level literacy sub-competencies over last three assessment years.

Change in Grade 2 numeracy sub-competencies score over last three assessment years.

When achievement on Grade-2 level numeracy sub-competencies are analysed across the last three assessment years, there is an observed increase in outcomes from 2021-22 to 2023-24.

- The student average score in Measurement (मापन) was 90% in 2021-2022, which increased to 93% in 2022-2023, and further increased to 95% in 2023-2024. *The change in student achievement between 2021-22 to 2023-24 is statistically significant³⁸.The students have excelled the most in this numeracy sub-competency.*

³⁴value of z is -1.1321. The value of p is .25848. The result is not significant at $p < .05$. (two-tailed)

³⁵value of z is -6.9428. The value of p is $< .00001$. The result is significant at $p < .05$. (two-tailed)

³⁶ value of z is -5.2822. The value of p is $< .00001$. The result is significant at $p < .05$. (two-tailed)

³⁷value of z is -1.9144. The value of p is .05614. The result is not significant at $p < .05$. (two-tailed)

³⁸ value of z is -3.6997. The value of p is .00022. The result is significant at $p < .05$. (two-tailed)

- Likewise, in बेरीज वजाबाकी, the students average score was 32% in 2021-2022, which increased to 59% in 2022-2023 and further increased to 66% in 2023-2024. *The improvement from 2021-22 to 2023-24 is significant³⁹*. Next to Measurement (मापन), the students have excelled the most in this numeracy sub-competency.
- Similarly, in अपूर्णांक, the students' average score was 54% in 2021-2022, which increased to 64% in 2022-2023, and further to 68% in 2023-2024. Though there is a significant improvement from 2021-22 to 2023-24⁴⁰, but a decrease from 2022-23 to 2023-24. *Thus, this numeracy sub-competency needs special emphasis going forward.*
- In 'numbers and place value' (संख्याद्यान व स्थानिक किंमत), the students average score was 47% in 2021-2022, which decreased to 33% in 2022-2023; but increased to 47% in 2023-2024 (significant change as compared to 2021-22). Though the student performance remains the same in 2021-22 and 2022-23⁴¹, there is an observed improvement in 2023-24 from the status in 2022-23.
- In गुणाकार भागाकार, the average score of students was 89% in 2021-2022, which increased to 92% in 2022-2023, and further increased to 94% in 2023-2024. There is *significant⁴²* increase in students' achievement between 2021-22 and 2023-24.

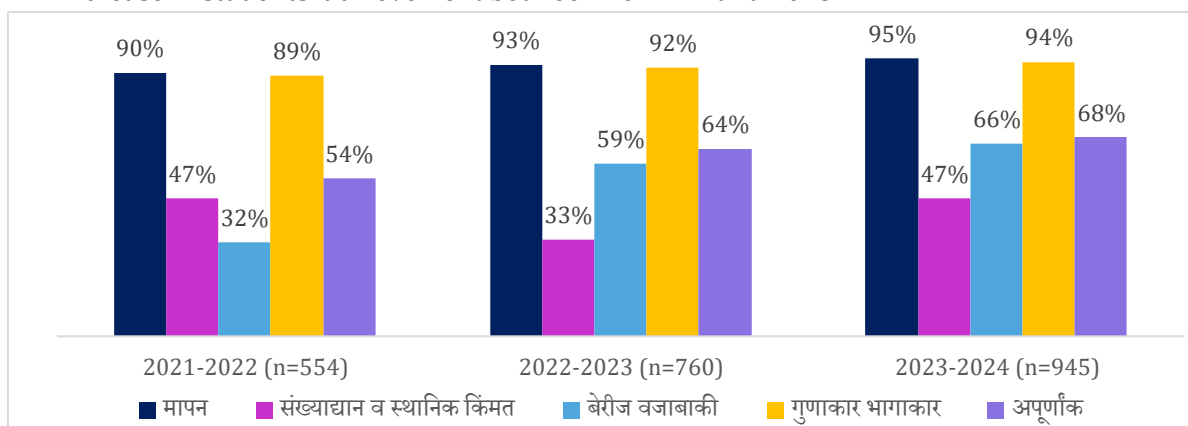


Figure 13: Change in scores across grade 2 numeracy sub-competencies in all three years.

Overall Foundational Literacy and Numeracy (FLN)

The overall foundational literacy and numeracy comparison presented below is for last two assessment years and for common jurisdictions, i.e., Pune ZP, PCMC, Nagpur ZP, NMC, Nashik ZP and Chandrapur ZP

Change in literacy and numeracy outcomes over last two assessment years.

As regards the FLN outcomes for Grade-3 students, the overall scores have witnessed a significant⁴³ growth from 53% in 2022-2023 to 58% in 2023-24. *Thus, indicating an improvement in overall literacy and numeracy FLM outcomes for Grade-3 students.*

Component-wise:

39 value of z is -12.7381. The value of p is < .00001. The result is significant at p < .05two-tailed)

40 value of z is -5.4139. The value of p is < .00001. The result is significant at p < .05. (two-tailed)

41 value of z is 0. The value of p is 1. The result is not significant at p < .05. (two-tailed)

42 value of z is -3.4746. The value of p is .00052. The result is significant at p < .05. (two-tailed)

43 value of z is -2.5189. The value of p is .01174. The result is significant at p < .05. (two-tailed)

- Literacy score has increased from 52% in 2022-23 to 54% in 2023-24⁴⁴.
- Numeracy score has increased significantly⁴⁵ from 54%⁵⁷ in 2022-23 to 61% in 2023-24.

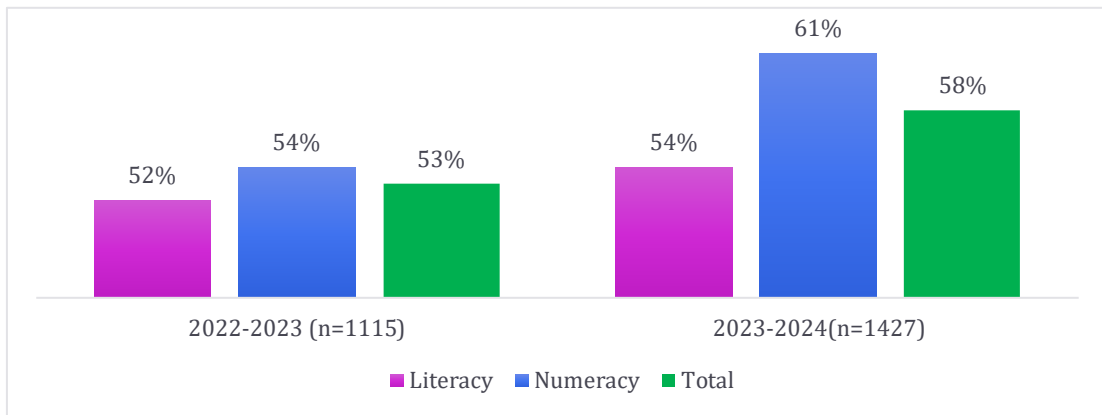


Figure 14: Change in literacy and numeracy outcomes year wise.

Composite numeracy and literacy competencies score 2023-2024

Overall, in 2023-24, 15% Grade-3 students (14% female and 15% male) achieved a composite score in the range of 80% to 100%. This is followed by 34% (36% female and 32% male), who scored in the range of 60% to 80%. *This indicates that less than half (49%) students scored between 60% to 100%. Thus, going forward, the overall FLN numeracy and literacy competencies of Grade-3 need specific emphasis.*

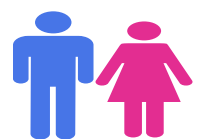
A little over half (51%) of the student scored between 0% to 60%, with 12% students (11% female and 13% male) scoring 30% or lower. (Figure below)

Geography/jurisdiction-wise

- The highest performing geography (with more students scoring between 80% to 100%) was Pune ZP, and comparatively the lowest performing one were Nagpur MC and Nagpur ZP.

Gender-wise:

- The best performance of the female students (those who score in the range of 80% to 100%) was found in Pune ZP (34%); and the lowest performance were found in Nagpur MC (1%) and Nagpur ZP (1%).
- The best performance of the male students (those who score in the range of 80% to 100%) was also found in Pune ZP (43%); and the lowest performance were found in Nagpur MC (1%) and Nagpur ZP (5%).
- *Comparatively across all geographies/jurisdictions the male students (16%) performed comparatively better or at the par than the female students (14%), when it comes to composite scoring between 80% to 100%.*



⁴⁴ value of z is -1.0027. The value of p is .31732. The result is not significant at $p < .05$. (two-tailed)

⁴⁵ value of z is -3.5475. The value of p is .00038. The result is significant at $p < .05$. (two-tailed)

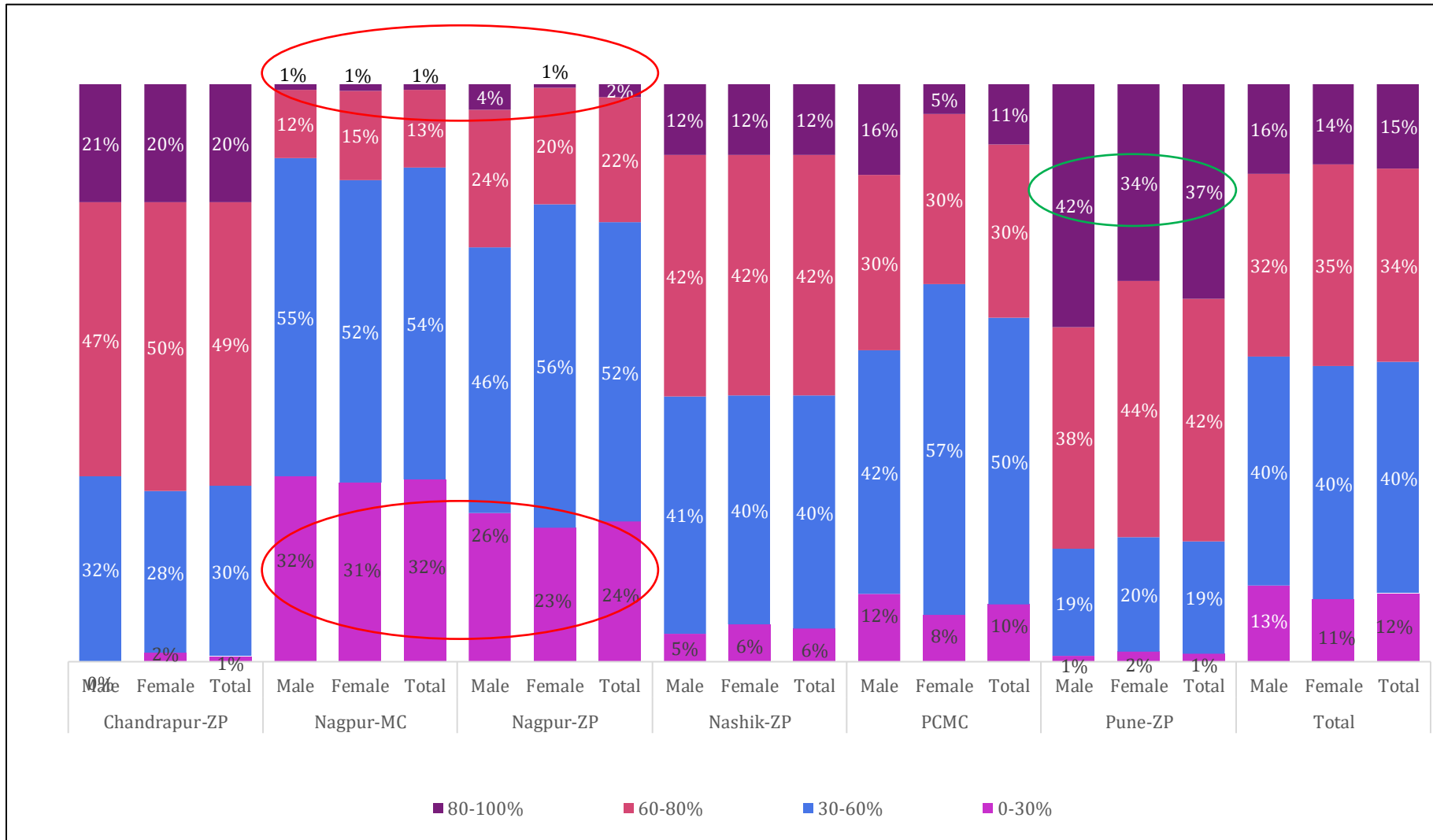


Figure 15: Composite numeracy and literacy competencies score -jurisdiction & gender-wise 2023-2024

Change in composite literacy and numeracy score over last two assessment years

The overall composite literacy and numeracy comparison presented below is for last two assessment years and for common jurisdictions, i.e., Pune ZP, PCMC, Nagpur ZP, NMC, Nashik ZP and Chandrapur ZP. When compared across last two assessment years (2022-23 and 2023-24), the proportion of students compositely scoring (literacy and numeracy together) in the range of 80% to 100%, witnessed a significant⁴⁶ increase from 3% in 2022-23 to 6% in 2023-24.

Component-wise:

- In literacy outcomes, the proportion of students scoring in the range of 80% to 100%, witnessed an increase from 8% in 2022-23 to 9% in 2023-24⁴⁷.
- In numeracy outcomes, the proportion of students scoring in the range of 80% to 100%, also witnessed a significant⁴⁸ increase from 13% in 2022-23 to 21% in 2023-24.

Table 7: Composite literacy and numeracy score over last two assessment years

| Component/ Score Range | | | Numeracy | | | | | | | |
|------------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | | 0-30% | | 30-60% | | 60-80% | | 80-100% | |
| | | | 2022-2023 | 2023-2024 | 2022-2023 | 2023-2024 | 2022-2023 | 2023-2024 | 2022-2023 | 2023-2024 |
| Literacy | 0-30% | 2022-2023 | 116(10%) | | 98 (9%) | | 6 (1%) | | 0 (0%) | |
| | | 2023-2024 | | 127(9%) | | 104(7%) | | 8(1%) | | 1(0%) |
| | 30-60% | 2022-2023 | 67 (6%) | | 290 (26%) | | 82 (7%) | | 13 (1%) | |
| | | 2023-2024 | | 42(3%) | | 309(22%) | | 210(15%) | | 47(3%) |
| | 60-80% | 2022-2023 | 6 (1%) | | 94 (8%) | | 158 (14%) | | 92 (8%) | |
| | | 2023-2024 | | 0(0%) | | 88(6%) | | 199(14%) | | 161(11%) |
| | 80-100% | 2022-2023 | 0 (0%) | | 9 (1%) | | 45 (4%) | | 39 (3%) | |
| | | 2023-2024 | | 0(0%) | | 9(1%) | | 30(2%) | | 92(6%) |

However, there is a notable increase from 2022-23 to 2023-24 in proportion of students in the range of 30% to 80%. Thus, at an aggregate it can be said that there has been an improvement in the FLN scores from 2022-23 to 2023-24

46 value of z is -3.5521. The value of p is .00038. The result is significant at $p < .05$. (Two-tailed)

47 value of z is -0.8942. The value of p is .37346. The result is not significant at $p < .05$. (Two-tailed)

48 value of z is -5.2686. The value of p is < .00001. The result is significant at $p < .05$. (Two-tailed)

Change in literacy sub-competencies score over last two assessment years.

The insights emerging from comparison of literacy sub-competencies scores, indicate an aggregate improvement in outcomes over last two assessment years (figure below).

- In reading comprehension (वाचून आकलन), the average score of students increased significantly⁴⁹ from 65% in 2022-23 to 69% in 2023-2024.
- In vocabulary (शब्दसंपत्ती), where in 2022-2023, students' average score increased from 65% to 67% in 2023-2024⁵⁰.
- In Functional grammar and punctuation (कार्यात्मक व्याकरण व विरामचिन्हे), the average score of students increased significantly⁵¹ from 51% in 2022-23 to 58% in 2023-24.
- For working with books (पुस्तका सोबत काम), the average score of students increased from 66% in 2022-2023 to 69% in 2023-2024⁵².
- Similarly, in language development (मुलाची बोली), the average score of students increased from was 22% in 2022-23 to 24% in 2023-2024⁵³.
- However, in written expression (लेखी अभिव्यक्ती), the average score of students which was 40% in 2022-23, witnessed a dip significant dip to 36% in 2023-24⁵⁴. Thus, it emerges that written expression (लेखी अभिव्यक्ती) is an aspect, which needs specific emphasis for Grade-3 students.

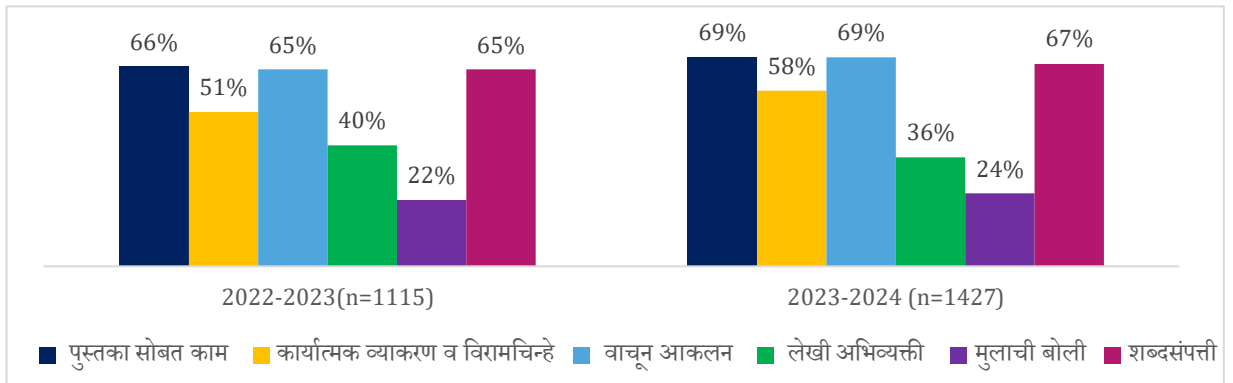


Figure 16: Change in literacy competencies scores over last two assessment years.

Literacy competency score - jurisdictions and gender wise

The geography/jurisdiction-wise analysis of 2023-24 data for literacy competencies, brings to fore that:

- Pune ZP fares the best with an average score of 69%.
- Comparatively, the lowest performing geography/jurisdiction- is Nagpur MC with average score of 37%.

Gender-wise:

- The geography/jurisdiction where the female students scored the highest is Pune ZP, where the average score of female students was 69%. The lowest performing

49value of z is -2.1323. The value of p is .03318. The result is significant at $p < .05$. (two-tailed)

50value of z is -1.0572. The value of p is .28914. The result is not significant at $p < .05$. (two-tailed)

51value of z is -3.5197. The value of p is .00044. The result is significant at $p < .05$. (two-tailed)

52value of z is -1.6048. The value of p is .1096. The result is not significant at $p < .05$. (two-tailed)

53value of z is -1.1868. The value of p is .23404. The result is not significant at $p < .05$. (two-tailed)

54value of z is 2.0643. The value of p is .0394. The result is significant at $p < .05$. (two-tailed)

geography/jurisdiction in this regard was found to be Nagpur MC, where the average score of female students was 37%.

- The geography/jurisdiction where the male students scored the highest is also the Pune ZP, where the average score of male students was 70%. The lowest performing geography/jurisdiction in this regard was also found to be the Nagpur MC, where the average score of male students was 37%.
- At an aggregate, the female students (54%) performed a little better than the male students (53%)⁵⁵.

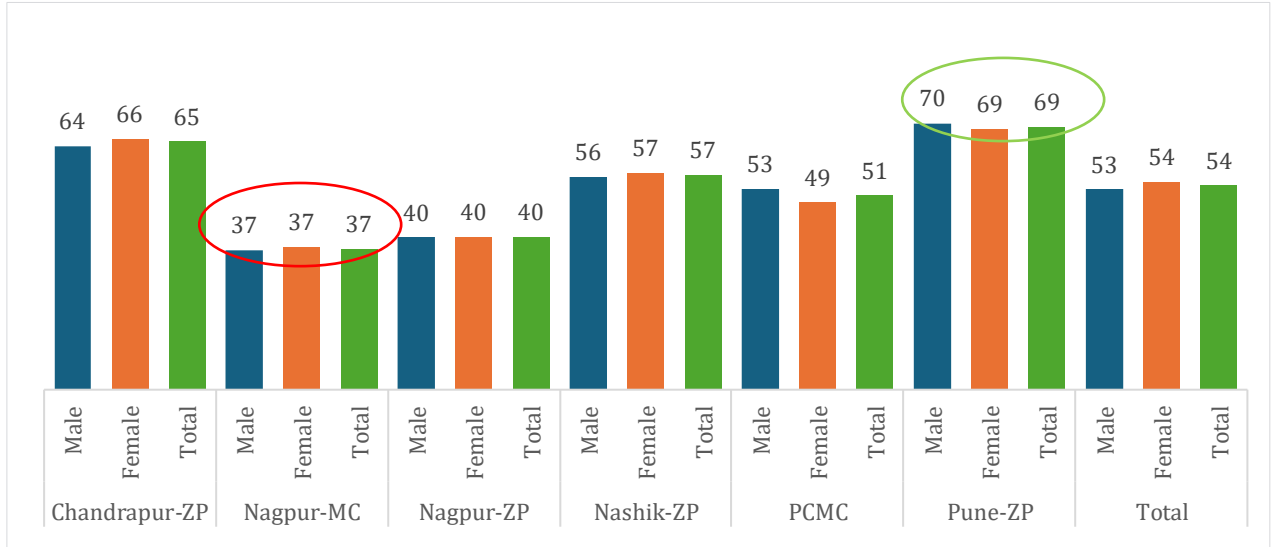
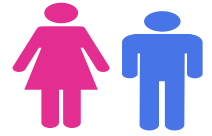


Figure 17: Change in literacy competencies scores- jurisdiction and gender-wise.

Students' literacy sub-competencies scores in 2023-24

The analysis of scores for literacy sub-competencies, highlights that the students excelled the most in following sub-competencies (table below):

- Working with books (पुस्तका सोबत काम), where 52% students scored between 80% to 100%.
- Vocabulary (शब्दसंपत्ती), where 51% students between 80-100%.
- Reading comprehension (वाचून आकलन), where 41% students scored between 80% to 100%.

However, a significant portion of students faced challenges in following sub-competencies, indicating that going forward, these sub-competencies need special emphasis for Grade-3 students:

- Functional grammar and punctuation (कार्यात्मक व्याकरण व विरामचिन्हे), where only 23% students scored between 80% to 100%.
- Oral language development (मुलाची बोली) and Writing for self-expression (लेखी अभिव्यक्ती), where only 2% students scored between 80% to 100%.

Table 8: Students literacy sub-competencies score in 2023-2024.

| Competency | 0-30% | 30-60% | 60-80% | 80-100% |
|------------------|-------|--------|--------|---------|
| पुस्तका सोबत काम | 14% | 34% | 0% | 52% |
| मुलाची बोली | 47% | 38% | 13% | 2% |

⁵⁵ value of z is 0.5016. The value of p is .61708. The result is not significant at $p < .05$. (Two-tailed)

| Competency | 0-30% | 30-60% | 60-80% | 80-100% |
|----------------------------------|-------|--------|--------|---------|
| शब्दसंपत्ती | 17% | 32% | 0% | 51% |
| कार्यात्मक व्याकरण व विरामचिन्हे | 24% | 33% | 20% | 23% |
| वाचून आकलन | 10% | 23% | 26% | 41% |
| लेखी अभिव्यक्ती | 50% | 38% | 10% | 2% |

Change in numeracy sub-competencies score over the last two assessment years.

The insights emerging from comparison of numeracy competencies scores for last two assessment years, indicate an improvement in student performance in numeracy sub-competencies.

- In reading measurement (मापन), the average students increased significantly⁵⁶ from 56% in 2022-23 to 75% in 2023-2024.
- Followed by management of information (माहितीचे व्यवस्थापन), the average students score increased significantly⁵⁷ from 63% in 2022-2023 to 70% in 2023-2024.
- Similarly in numerology and local price (संख्याद्यान व स्थानिक किंमत) also, the average students score increased significantly⁵⁸ from 37% in 2022-2023 to 46% in 2023-24.
- In Fractions (अपूर्णांक), the average students score increased significantly⁵⁹ from 56% in 2022-23 to 61% in 2023-24.
- In multiplication division (गुणाकार भागाकार), the average students score increased from 79% in 2022-23 to 82% in 2023-24⁶⁰.
- In addition-subtraction (बेरीज वजाबाकी), the students average score increased significantly⁶¹ from 48% in 2023-24 to 52% in 2023-24.

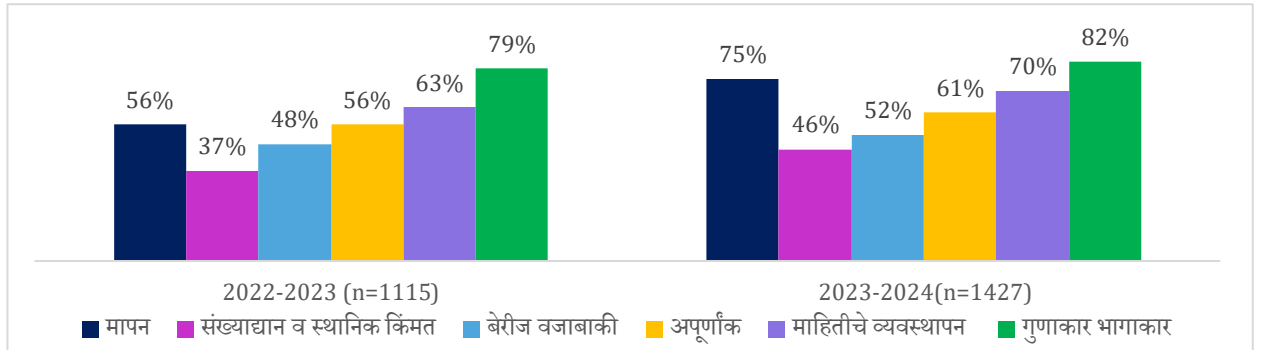


Figure 18: Change in numeracy sub-competencies score over the last two assessment years.

Change in numeracy competency score- jurisdictions and gender wises.

The geography/jurisdiction-wise analysis of 2023-24 data for numeracy competencies, brings to fore that:

- Pune ZP fares the best with an average score of 77%.
- Comparatively, the lowest performing geography/jurisdiction- is Nagpur MC with average score of 44%.

56value of z is -10.0837. The value of p is < .00001. The result is significant at p < .05. (two-tailed)

57value of z is -3.7225. The value of p is .0002. The result is significant at p < .05. (two-tailed)

58value of z is -4.5613. The value of p is < .00001. The result is significant at p < .05. (two-tailed)

59value of z is -2.5416. The value of p is .01108. The result is significant at p < .05. (two-tailed)

60value of z is -1.9012. The value of p is .05744. The result is not significant at p < .05. (two-tailed)

61value of z is -2.0015. The value of p is .0455. The result is significant at p < .05. (two-tailed)

Gender-wise:

- The geography/jurisdiction where the female students scored the highest is Pune ZP, where the average score of female students was 75%. The lowest performing geography/jurisdiction in this regard was found to be Nagpur MC, where the average score of female students was 43%.
- The geography/jurisdiction where the male students scored the highest is also the Pune ZP, where the average score of male students was 80%. The lowest performing geography/jurisdiction in this regard was also found to be Nagpur MC, where the average score of male students was 46%.
- At an aggregate, in Grade-3, female (61%) and male students (62%) performed almost the same⁶².

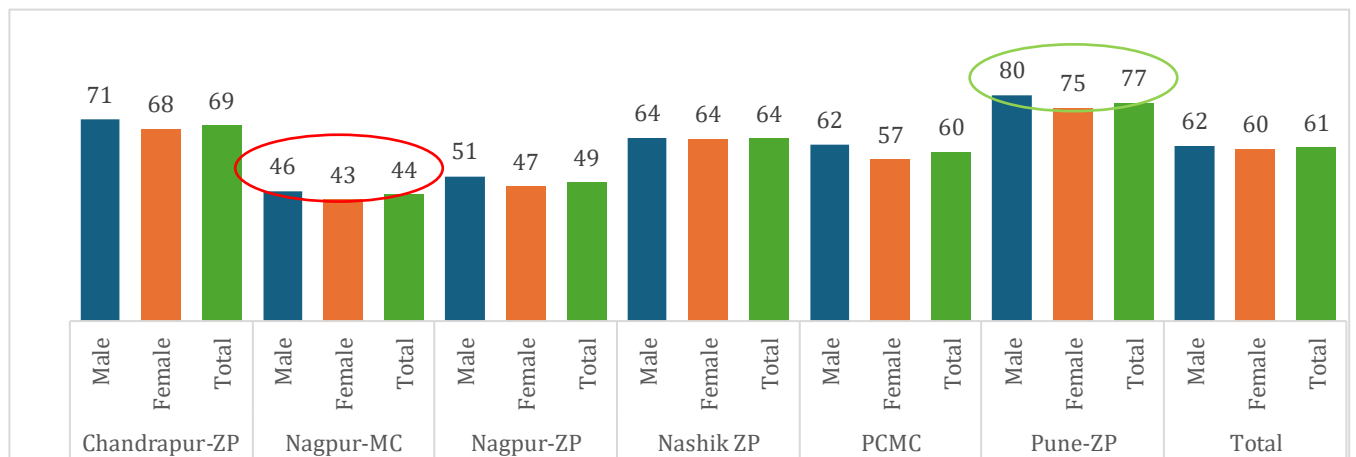


Figure 19: Change in numeracy competency jurisdiction & gender wise 2023-2024

Student numeracy competencies scores in 2023-2024

The analysis of scores for numeracy sub-competencies, highlights that the students excelled the most in following sub-competencies:

- Multiplication-division (गुणाकार, भागाकार) where 63% students scored between 80% to 100%.
- Measurement (मापन), where 49% students, scored between 80% to 100%.
- Management of information (माहितीचे व्यवस्थापन), where 45% students, scored between 80% to 100%.

However, a significant portion of students faced challenges in following sub-competencies, which going forward, needs special emphasis for Grade-3 students:

- Fractions (अपूर्णांक), where 14% students scored between 80% to 100%.
- Numerology/Number and Place Value (संख्याद्यान व स्थानिक किंमत), where 17% students scored between 80% to 100%.
- Addition-subtraction (बेरीज वजाबाकी), where 26% students scored between 80% to 100%.

62 value of z is -0.5143. The value of p is .61006. The result is not significant at $p < .05$. (Two-tailed)

Table 9: Students numeracy competencies scores in 2023-2024

| Competency | 0-30% | 30-60% | 60-80% | 80-100% |
|-----------------------------|-------|--------|--------|---------|
| मापन | 3% | 41% | 7% | 49% |
| संख्याद्यान व स्थानिक किंमत | 36% | 30% | 17% | 17% |
| बेरीज वजाबाकी | 28% | 30% | 16% | 26% |
| गुणाकार, भागाकार | 3% | 8% | 25% | 63% |
| अपूर्णांक | 9% | 52% | 25% | 14% |
| माहितीचे व्यवस्थापन | 10% | 17% | 28% | 45% |

3.3. Grade 5

The Grade 5 schedule had only one major section, i.e., overall Foundational Literacy and Numeracy (FLN), over which, the data is available and has been analysed for last three assessment years (2021-22, 2022-23 and 2023-24) and for the *common jurisdictions, i.e., Pune ZP, PCMC, Nagpur ZP, NMC, Nashik ZP and Chandrapur ZP*. The data for assessment year 2023-24 has been analysed for the six jurisdictions covered in the year. The insights emerging from the analysis of assessments of Grade-5 students are presented below.

Overall Foundational Literacy and Numeracy (FLN)

Change in FLN outcome scores over last three assessment years.

The FLN outcomes comparison presented below is for last three assessment years across the common jurisdictions, i.e., Pune ZP, PCMC, NMC and Nashik ZP. As regards the FLN outcomes, the overall scores have witnessed an increase from 44% in 2021-2022, to 61% in 2022-23, to 67% in 2023-24. The improvement in student achievement between 2021-22 to 2023-24 is significant⁶³. Thus, indicating an improvement in overall FLN outcomes of Grade-5 students over last three assessment years.

Component-wise:

- Literacy score has increased from 51% in 2021-22, to 61% in 2022-23, and further to 66% in 2023-24. The improvement in student achievement between 2021-22 to 2023-24 is significant⁶⁴.
- Numeracy score has increased from 38% in 2021-22, to 62% in 2022-23 and remain almost same in 2023-24 at 68%. The improvement in student achievement between 2021-22 to 2023-24 is significant⁶⁵.

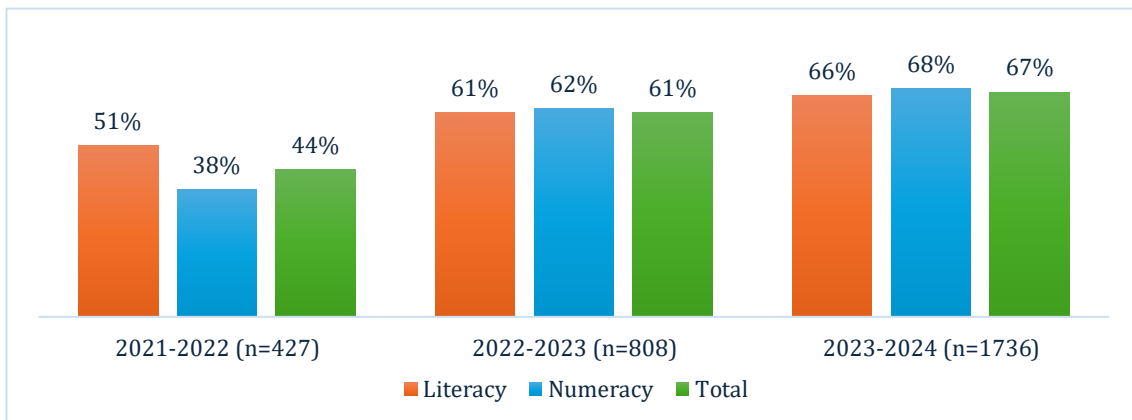


Figure 20: Change in literacy & numeracy outcome scores over last three assessment years.

Change in literacy and numeracy outcomes scores in 2022-23 to 2023-24

The Literacy & Numeracy comparison presented below is of two years common jurisdictions i.e. Pune ZP, PCMC, NMC, Nashik ZP, Nagpur ZP and Chandrapur ZP. The overall scores have

63 value of z is -2.3417. The value of p is .01928. The result is significant at $p < .05$. (Two-tailed)

64 value of z is -5.7527. The value of p is $< .00001$. The result is significant at $p < .05$ (Two-tailed)

65 value of z is -11.4463. The value of p is $< .00001$. The result is significant at $p < .05$. (Two-tailed)

witnessed a significant⁶⁶ increase from 61% in 2022-23, to 65% in 2023-24, indicating an improvement in overall FLN outcomes of Grade-5 students over last two assessment years.

Component-wise:

- Literacy score has increased *significantly*⁶⁷ from 60% in 2022-23, and further to 64% in 2023-24.
- Numeracy score has increased *significantly*⁶⁸ from 61% in 2022-23 to 2023-24 at 66%.

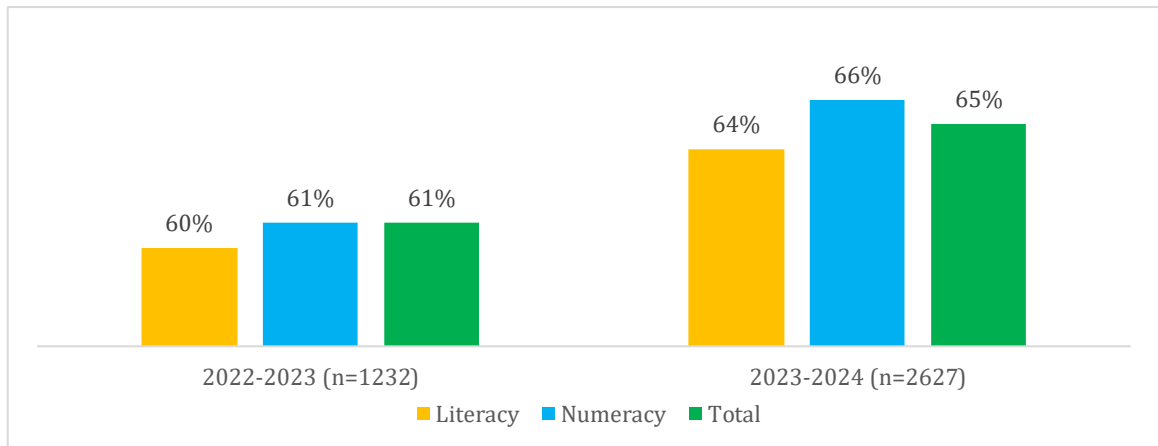


Figure 21: Change in literacy and numeracy outcomes scores in 2022-23 to 2023-24

Composite literacy and numeracy competencies score-2023-2024

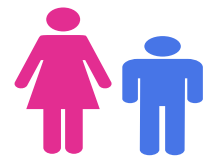
Overall, in 2023-24, 33% Grade-5 students (37% female and 29% male) achieved a composite score in the range of 80% to 100%. This is followed by 30% (28% female and 32% male), who scored in the range of 60% to 80%. Thus, indicating that majority (63%) of the students scored between 60% to 100%. However, about 37% students scored in the range of 0% and 60%, with 11% students (10% female and 12% male) scoring 30% or less. (Figure below)

Geography/jurisdiction-wise:

- The highest performing geography was Pune ZP, where 57% students scored between 80% to 100%. Comparatively, the comparatively lowest performing geography was Nagpur MC, where only 6% students scored between 80% to 100%.

Gender-wise:

- The best performance of the female students (those who score in the range of 80% to 100%) was found in Pune ZP (65%); and the lowest performance were found in Nagpur MC (8%).
- The best performance of the male students (those who score in the range of 80% to 100%) was also found in Pune ZP (48%); and the lowest performance were also found in Nagpur MC (5%).
- Comparatively, the female students (37%) performed comparatively better or at the par than the male students (29%), when it comes to composite scoring between 80% to 100%.



⁶⁶ value of z is -2.4093. The value of p is .01596. The result is significant at $p < .05$. (Two-tailed)

⁶⁷ value of z is -2.3957. The value of p is .0164. The result is significant at $p < .05$ (Two-tailed)

⁶⁸ value of z is -3.0242. The value of p is .00252. The result is significant at $p < .05$ (Two-tailed)

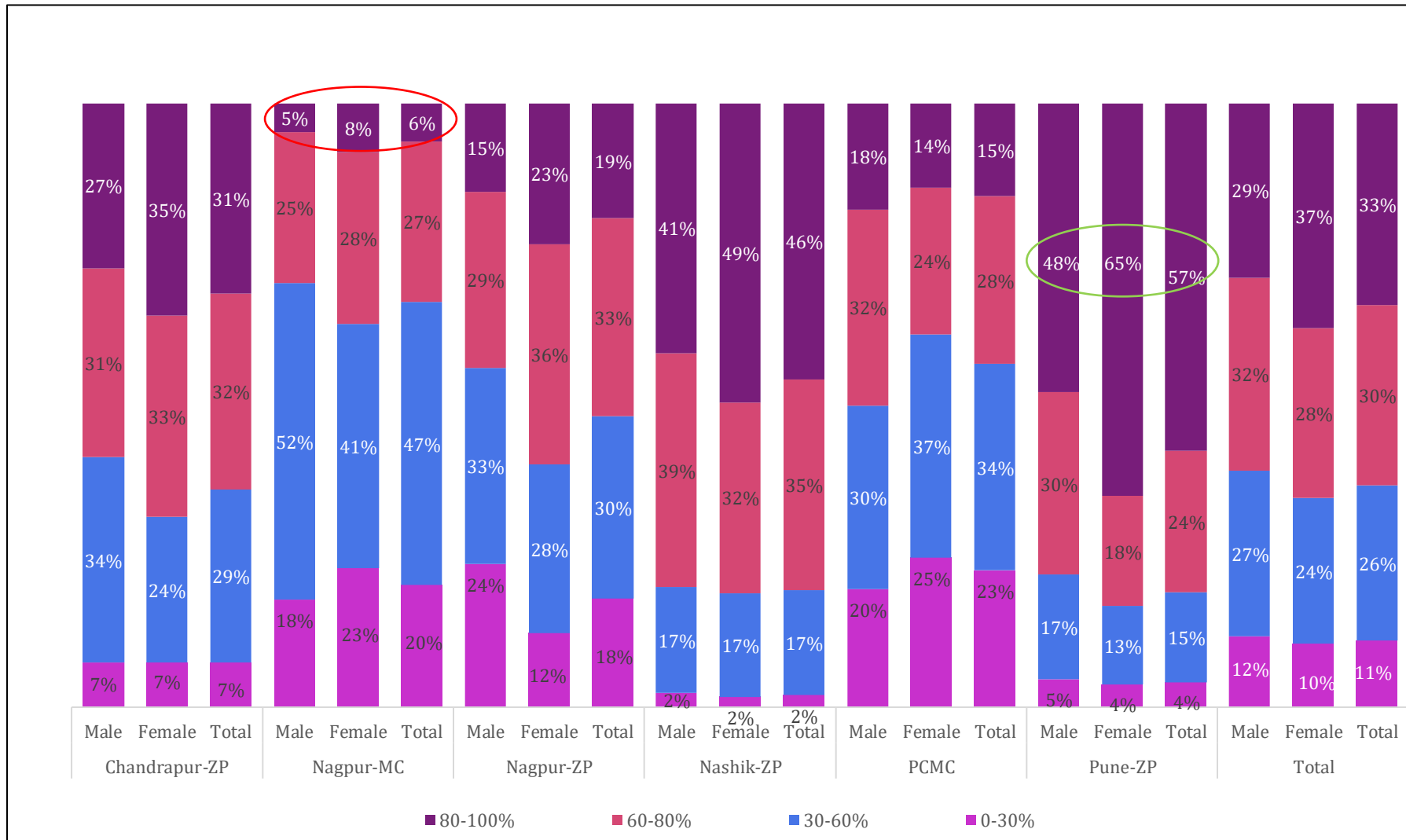


Figure 22: Composite numeracy and literacy competencies score - jurisdiction & gender wise 2023-2024

Change in literacy and numeracy composite score over last three assessment years for four common jurisdictions

The composite score comparison presented below is for last three years (2021-22, 2022-23 and 2023-24) and for the four common jurisdictions, i.e., Pune ZP, PCMC, NMC and Nashik ZP. When compared component-wise (table below):

- In literacy outcomes, the proportion of students scoring in the range of 80% to 100%, witnessed a consistent increase from 15% in 2021-22 to 25% in 2022-23; and further to 30% in 2023-24. The change between in student achievement between 2021-22 to 2023-24 is significant⁶⁹.
- In numeracy outcomes also, the proportion of students scoring in the range of 80% to 100%, witnessed a consistent increase from 8% in 2021-22, to 31% in 2022-23; and further to 42% in 2023-24. The change between in student achievement between 2021-22 to 2023-24 is significant⁷⁰.

It can be deduced from above findings that though the students' outcomes, in both numeracy and literacy have improved over the last three assessment years.

69 value of z is -6.2519. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

70 value of z is -13.1714. The value of p is < .00001. The result is significant at p < .05 (Two-tailed)

| Competency/ Score Ranges/ Year | | | Numeracy | | | | | | | | | | | |
|--------------------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | | 0-30% | | | 30-60% | | | 60-80% | | | 80-100% | | |
| | | | 2021-2022 | 2022-2023 | 2023-2024 | 2021-2022 | 2022-2023 | 2023-2024 | 2021-2022 | 2022-2023 | 2023-2024 | 2021-2022 | 2022-2023 | 2023-2024 |
| Literacy | 0-30% | 2021-2022 | 112 (26%) | | | 8 (2%) | | | 1 (0%) | | | 0 (0%) | | |
| | | 2022-2023 | | 73 (9%) | | | 35 (4%) | | | 8 (1%) | | | 1 (0%) | |
| | | 2023-2024 | | | 103 (6%) | | | 62 (4%) | | | 12 (1%) | | | 3 (0%) |
| | 30-60% | 2021-2022 | 70 (16%) | | | 56 (13%) | | | 8 (2%) | | | 2 (0%) | | |
| | | 2022-2023 | | 54 (7%) | | | 111 (14%) | | | 69 (9%) | | | 19 (2%) | |
| | | 2023-2024 | | | 90 (5%) | | | 178 (10%) | | | 104 (6%) | | | 37 (2%) |
| | 60-80% | 2021-2022 | 12 (3%) | | | 46 (11%) | | | 41 (10%) | | | 9 (2%) | | |
| | | 2022-2023 | | 8 (1%) | | | 64 (8%) | | | 90 (11%) | | | 75 (9%) | |
| | | 2023-2024 | | | 20 (1%) | | | 97 (6%) | | | 220 (13%) | | | 289 (17%) |
| | 80-100% | 2021-2022 | 1 (0%) | | | 7 (2%) | | | 30 (7%) | | | 24 (6%) | | |
| | | 2022-2023 | | 0 (0%) | | | 14 (2%) | | | 34 (4%) | | | 153 (19%) | |
| | | 2023-2024 | | | 2 (0%) | | | 27 (2%) | | | 87 (5%) | | | 405 (23%) |

Table 10: Composite score in literacy and numeracy over last three assessment years

Change in literacy and numeracy composite score over last two assessment years for six common jurisdictions

The composite score comparison presented below is for last two assessment years (2022-23 to 2023-24) and for the six common jurisdictions, i.e., Pune ZP, PCMC, Nashik MC, Nashik ZP, Chandrapur ZP and Nagpur ZP.

When compared across last two assessment years (2022-23 and 2023-24), component-wise (table below):

- In literacy outcomes, the proportion of students scoring in the range of 80% to 100%, witnessed a significant⁷¹ increase from 22% in 2022-23 to 26% in 2023-24.
- In numeracy outcomes, the proportion of students scoring in the range of 80% to 100%, witnessed a significant⁷² increase from 30% in 2022-23 to 39% in 2023-24.

It can be deduced from above findings that though the students' outcomes, in both numeracy and literacy have improved in 2023-24 as compared to the status in 2022-23.

Table 11: Composite score in literacy and numeracy in 2022-23 to 2023-24

| Component/ Score Range | | | Numeracy | | | | | | | |
|------------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | | 0-30% | | 30-60% | | 60-80% | | 80-100% | |
| | | | 2022-2023 | 2023-2024 | 2022-2023 | 2023-2024 | 2022-2023 | 2023-2024 | 2022-2023 | 2023-2024 |
| Literacy | 0-30% | 2022-2023 | 118(10%) | | 55 (4%) | | 15 (1%) | | 2 (0%) | |
| | | 2023-2024 | | 186(7%) | | 108(4%) | | 17(1%) | | 3(0%) |
| | 30-60% | 2022-2023 | 91 (7%) | | 168 (14%) | | 110 (9%) | | 34 (3%) | |
| | | 2023-2024 | | 145(6%) | | 301(12%) | | 187(7%) | | 67(3%) |
| | 60-80% | 2022-2023 | 10 (1%) | | 89 (7%) | | 146 (12%) | | 118 (10%) | |
| | | 2023-2024 | | 24(1%) | | 153(6%) | | 335(13%) | | 424(16%) |
| | 80-100% | 2022-2023 | 0 (0%) | | 18 (1%) | | 46 (4%) | | 212 (17%) | |
| | | 2023-2024 | | 3(0%) | | 35(1%) | | 115(4%) | | 524(20%) |

⁷¹ value of z is -2.6852. The value of p is .00714. The result is significant at p < .05 (Two-tailed)

⁷² value of z is -5.4258. The value of p is < .00001. The result is significant at p < .05 (Two-tailed)

Change in literacy sub-competencies score over last three assessment years for the four common jurisdictions

The insights emerging from comparison of literacy sub-competencies scores, indicate a consistent increase from assessment year 2021-22 to 2023-24.

- As regards decoding (लिपी परिचय), the average score of students was 90% in 2021-2022, which increased to 95% in 2022-2023, but witnessed a dip to 92% in 2023-2024⁷³.
- In Functional grammar and punctuation (कार्यात्मक व्याकरण व विरामचिन्हे), the average score of students was 28% in 2021-22, which increased to 43% in 2022-23, and further increased to 56% in 2023-24. The improvement in student achievement between 2021-22 to 2023-24 is significant⁷⁴.
- In self-expression (लेखी अभिव्यक्ती), the average score of students was 49% in 2021-22, which remained almost the same (48%) in 2022-23, but increased to 53% in 2023-24. The improvement in student achievement between 2021-22 to 2023-24 is significant⁷⁵.
- In Reading comprehension (वाचून आकलन), the average score of students consistently increased from 47% in 2021-2022 to 67% in 2022-23, and further to 72% in 2023-24. The improvement in student achievement between 2021-22 to 2023-24 is significant⁷⁶.
- In Vocabulary (शब्दसंपत्ती) also, the average score of students consistently increased from 41% in 2021-22 to 52% in 2022-23, and further to 63% in 2023-24. The improvement in student achievement between 2021-22 to 2023-24 is significant⁷⁷.

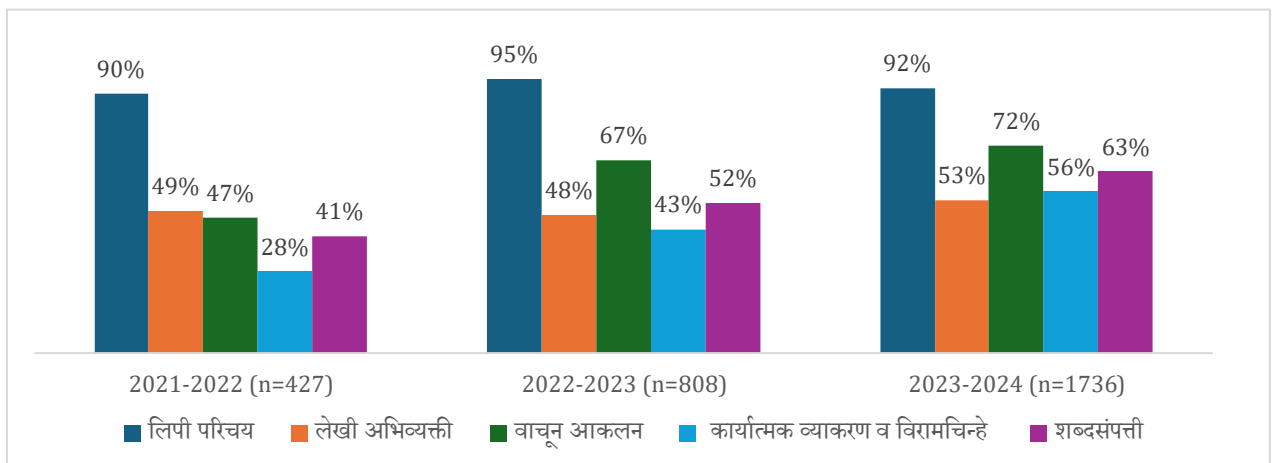


Figure 23: Change in literacy competencies scores over last three assessment years.

Change in literacy sub-competencies score over last two assessment years for six common jurisdictions

The insights emerging from comparison of numeracy sub-competencies scores, indicate a consistent increase from assessment year 2022-23 to 2023-24.

- As regards decoding (लिपी परिचय), the average score of students increased significantly⁷⁸ from 91% in 2022-2023 to 93% in 2023-2024.

⁷³ value of z is -1.3351. The value of p is .18024. The result is not significant at $p < .05$ (Two-tailed)

⁷⁴ value of z is 3.1923. The value of p is .00142. The result is significant at $p < .05$. (Two-tailed)

⁷⁵ value of z is 7.3555. The value of p is < 0.00001 . The result is significant at $p < .05$ (Two-tailed)

⁷⁶ value of z is 5.5693. The value of p is < 0.00001 . The result is significant at $p < .05$. (Two-tailed)

⁷⁷ value of z is 5.1684. The value of p is < 0.00001 . The result is significant at $p < .05$ (Two-tailed)

⁷⁸ value of z is 5.2272. The value of p is < 0.00001 . The result is significant at $p < .05$ (Two-tailed)

- In Functional grammar and punctuation (कार्यात्मक व्याकरण व विरामचिन्हे), the average score of students increased *significantly*⁷⁹ from 39% in 2022-23 to 52% in 2023-24.
- In self-expression (लेखी अभिव्यक्ती), the average score of students increased *significantly*⁸⁰ from 50% in 2022-23 to 51% in 2023-24.
- In Reading comprehension (वाचून आकलन), the average score of students increased *significantly*⁸¹ from 66% in 2022-23 to 69% in 2023-24.
- Vocabulary (शब्दसंपत्ती), the average score of students increased *significantly*⁸² from 47% in 2022-23 to 58% in 2023-24.

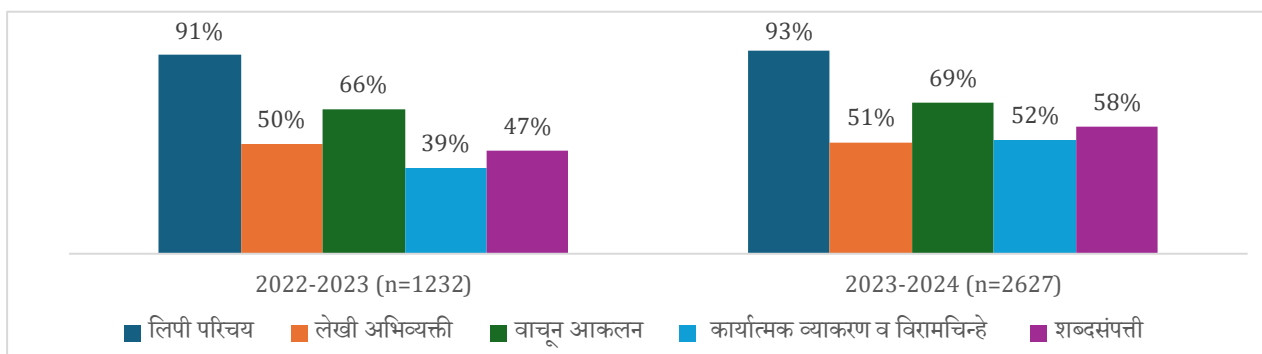


Figure 24: Change in literacy sub-competencies score in 2022-23 & 2023-24.

Literacy competency score 2023-24 - jurisdictions and gender wise

The geography/jurisdiction-wise analysis of 2023-24 data for literacy competencies, brings to fore that:

- Pune ZP fares the best with an average score of 74%.
- Comparatively, the lowest performing geography/jurisdiction- is Nagpur MC with average score of 52%.

Gender-wise:

- The geography/jurisdiction where the female students scored the highest is Pune ZP, where the average score of female students was 78%. The lowest performing geography/jurisdiction in this regard were found to be Nagpur MC and PCMC, where the average score of female students was 55%.
- The geographies/jurisdictions where the male students scored the highest are the Pune ZP and Nashik ZP, where the average score of male students was 69%. The lowest performing geography/jurisdiction in this regard was found Nagpur MC, where the average score of male students was 50%.
- At an aggregate, the female students (67%) performed better than the male students (60%)⁸³.



⁷⁹ value of z is 2.2638. The value of p is 0.02382. The result is significant at $p < .05$ (Two-tailed)

⁸⁰ value of z is 3.8403. The value of p is 0.00012. The result is significant at $p < .05$ (Two-tailed)

⁸¹ value of z is 4.3038. The value of p is < 0.00001 . The result is significant at $p < .05$ (Two-tailed)

⁸² value of z is 2.8607. The value of p is 0.00424. The result is significant at $p < .05$ (Two-tailed)

⁸³ value of z is 0.2822. The value of p is 0.77948. The result is not significant at $p < .05$ (Two-tailed)

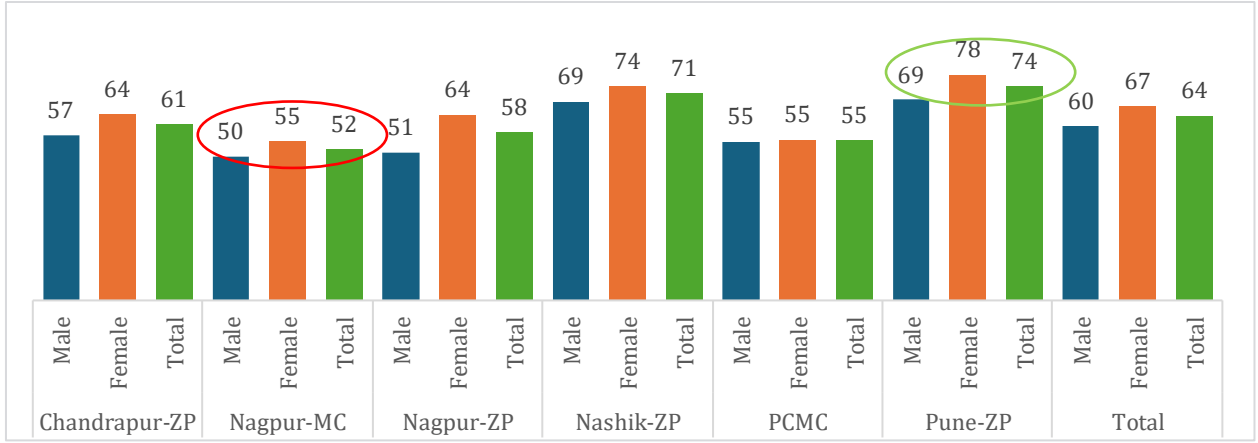


Figure 25: Literacy competency score- jurisdiction & gender wise 2023-2024

Students' literacy sub-competencies scores in 2023-2024

The analysis of scores for literacy sub-competencies, highlights that the students excelled the most in following sub-competencies (table below):

- Decoding (लिपी परिचय), where 85% students between 80-100%.
- Reading comprehension (वाचून आकलन) and Vocabulary (शब्दसंपत्ती) where 50% and 51% students, respectively scored between 80% to 100%.

However, a significant portion of students faced challenges in following sub-competencies, which going forward, need special emphasis for Grade-5 students.

- Writing for self-expression (लेखी अभिव्यक्ती), where only 7% students scored between 80%-100%.
- Functional grammar and punctuation (कार्यात्मक व्याकरण व विरामचिन्हे), where 33% students scored between 80% to 100%.

| Competency | 0-30% | 30-60% | 60-80% | 80-100% |
|----------------------------------|-------|--------|--------|---------|
| लिपी परिचय | 4% | 3% | 9% | 85% |
| लेखी अभिव्यक्ती | 23% | 46% | 23% | 7% |
| वाचून आकलन | 16% | 15% | 19% | 50% |
| कार्यात्मक व्याकरण व विरामचिन्हे | 31% | 16% | 21% | 33% |
| शब्दसंपत्ती | 35% | 15% | 0% | 51% |

Table 12: Students literacy competencies scores in 2023-2024

Change in numeracy sub-competencies scores over the last three assessment years for four common jurisdictions.

The insights emerging from comparison of numeracy sub-competencies scores, indicate a consistent increase from assessment year 2021-22 to 2023-24.

- As regards in Measurements (मापन), the students average score was 39% in 2021-22, which increased to 60% in 2022-23, and further increased to 68% in 2023-24. The improvement in student achievement between 2021-22 to 2023-24 is significant⁸⁴.

84 value of z is 4.4534. The value of p is < 0.00001. The result is significant at p < .05(Two-tailed)

- In multiplication-division (गुणाकार भागाकार), the average score of students was 47% in 2021-22, which increased to 69% in 2022-23, and further increased to 72% in 2023-24. *The improvement in student achievement between 2021-22 to 2023-24 is significant⁸⁵.*
- In fractions (अपूर्णांक), the average score of students was 42% in 2021-22, which increased to 55% in 2022-23, and further increased to 63% in 2023-24. *The improvement in student achievement between 2021-22 to 2023-24 is significant⁸⁶.*
- In Numerology (संख्याद्यान), the average score of students was 36% in 2021-22, which increased to 60% in 2022-23, and further increased to 67% in 2023-24. *The improvement in student achievement between 2021-22 to 2023-24 is significant⁸⁷.*
- In Management of Information (माहितीचे व्यवस्थापन), the average score of students was 36% in 2021-22, which increased to 59% in 2022-23, and further increased to 69% in 2023-24. *The improvement in student achievement between 2021-22 to 2023-24 is statistically significant⁸⁸.*
- In Addition-subtraction (बेरीज वजाबाकी), the average score of students was 32% in 2021-22, which increased to 62% in 2022-23, and further increased to 68% in 2023-24. *The improvement in student achievement between 2021-22 to 2023-24 is significant⁸⁹.*

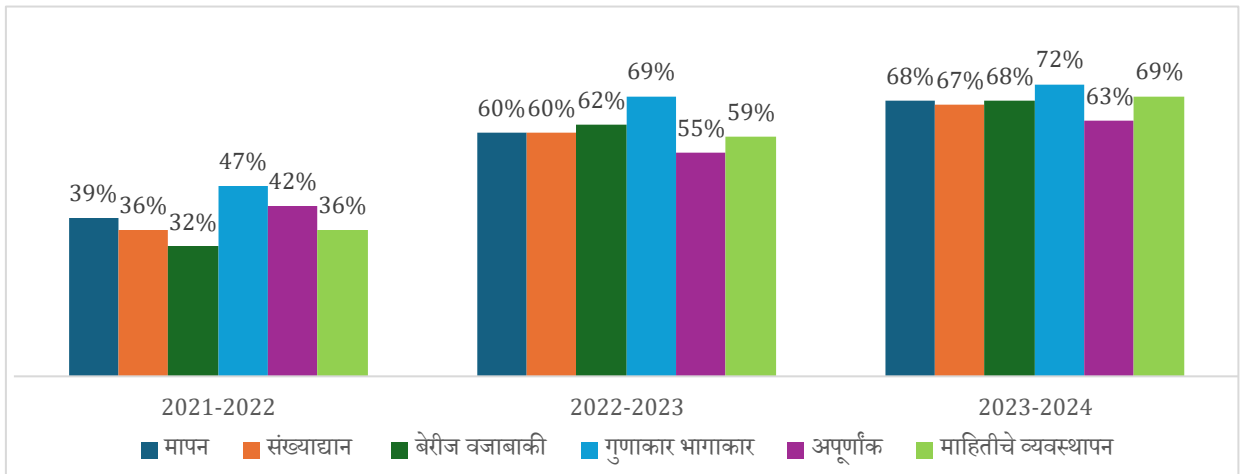


Figure 26: Change in numeracy sub-competencies scores over the last three assessment years for four common jurisdictions

Change in numeracy sub-competencies score over last two assessment years for six common jurisdictions

The insights emerging from comparison of numeracy sub-competencies scores, indicate a consistent increase from assessment year 2022-23 to 2023-24

- As regards in Measurements (मापन), the students average score increased *significantly*⁹⁰ from 58% in 2022-23 to 67% in 2023-24.
- In multiplication-division (गुणाकार भागाकार), the average score of students increased *significantly*⁹¹ from 68% in 2022-23 to 70% in 2023-24.

⁸⁵ value of z is 5.5693. The value of p is < 0.00001. The result is significant at p < .05 (Two-tailed)

⁸⁶ value of z is 5.3467. The value of p is < 0.00001. The result is significant at p < .05 (Two-tailed)

⁸⁷ value of z is 3.9739. The value of p is 0.00008. The result is significant at p < .05 (Two-tailed)

⁸⁸ value of z is 3.8386. The value of p is 0.00012. The result is significant at p < .05 (Two-tailed)

⁸⁹ value of z is 3.9059. The value of p is 0.0001. The result is significant at p < .05 (Two-tailed)

⁹⁰ value of z is 3.529. The value of p is 0.00042. The result is significant at p < .05 (Two-tailed)

⁹¹ value of z is 4.4523. The value of p is < 0.00001. The result is significant at p < .05 (Two-tailed)

- In fractions (अपूर्णांक), the average score of students increased *significantly*⁹² from 55% in 2022-23 to 60% in 2023-24.
- In Numerology (संख्याद्यान), the average score of students increased *significantly*⁹³ from 59% in 2022-23 to 64% in 2023-24.
- In Management of Information (माहितीचे व्यवस्थापन), the average score of students increased *significantly*⁹⁴ from 57% in 2022-23 to 65% in 2023-24.
- In Addition-subtraction (बेरीज वजाबाकी), the average score of students increased *significantly*⁹⁵ from 62% in 2022-23 to 66% in 2023-24.

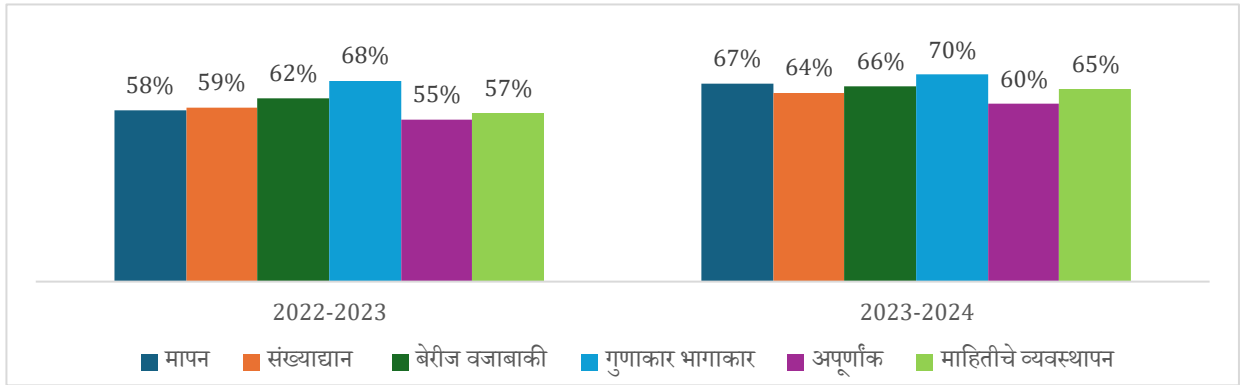


Figure 27: Change in numeracy sub-competencies score in 2022-23 & 2023-24 for six common jurisdictions

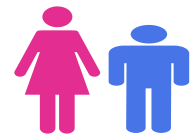
Change in numeracy competency score- jurisdictions and gender-wise.

The geography/jurisdiction-wise analysis of 2023-24 data for numeracy competencies, brings to fore that:

- Pune ZP fares the best with an average score of 79%.
- Comparatively, the lowest performing geography/jurisdiction- is Nagpur MC with average score of 49%.

Gender-wise:

- The geography/jurisdiction where the female students scored the highest is Pune ZP, where the average score of female students was 79%. The lowest performing geography/jurisdiction in this regard was found to be PCMC, where the average score of female students was 50%.
- The geography/jurisdiction where the male students scored the highest is Nashik ZP, where the average score of male students was 74%. The lowest performing geography/jurisdiction in this regard was found Nagpur MC, where the average score of male students was 50%.
- *At an aggregate, the female students (67%) performed comparatively better than male students (63%)*⁹⁶.



⁹² value of z is 3.7134. The value of p is 0.0002. The result is significant at p < .05 (Two-tailed)

⁹³ value of z is 3.8787. The value of p is 0.0001. The result is significant at p < .05 (Two-tailed)

⁹⁴ value of z is 3.5624. The value of p is 0.00038. The result is significant at p < .05 (Two-tailed)

⁹⁵ value of z is 4.0754. The value of p is < 0.00001. The result is significant at p < .05 (Two-tailed)

⁹⁶ value of z is 0.5716. The value of p is 0.56868. The result is not significant at p < .05 (Two-tailed)

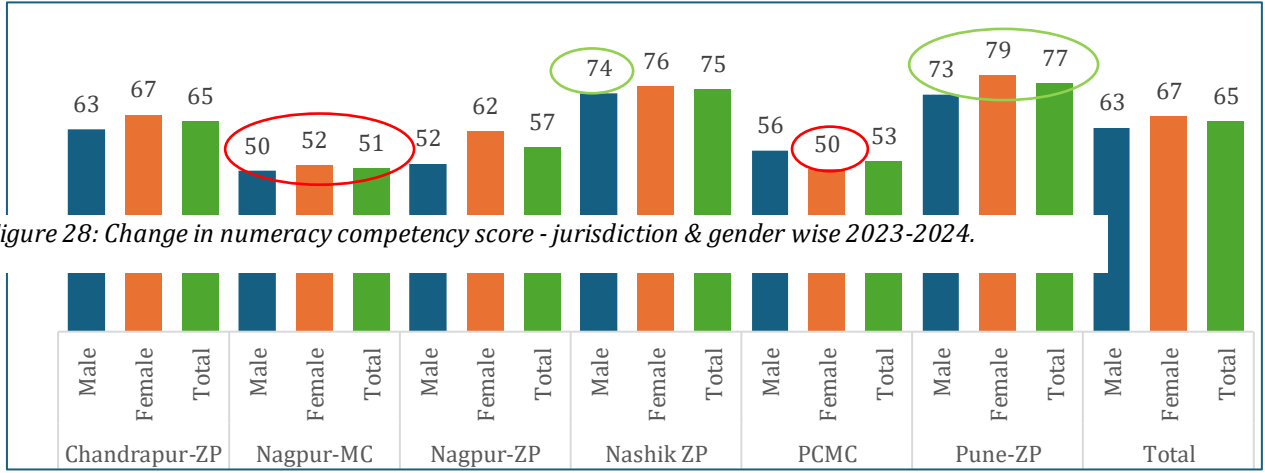


Figure 28: Change in numeracy competency score - jurisdiction & gender wise 2023-2024.

Students' numeracy sub-competencies scores in 2023-2024

The analysis of scores for numeracy sub-competencies, highlights that the students excelled the most in following sub-competency:

- Around 47% students in Multiplication-Division (गुणाकार, भागाकार) and 46% in management of information (माहितीचे व्यवस्थापन), scored between 80 to 100%.

However, a significant portion of students faced challenges in following sub-competencies, which going forward, need special emphasis for Grade-5 students:

- Fractions (अपूर्णांक), where only 21% of students scored between 80 to 100%.
- Numerology (संख्याद्यान), where only 36% students scored between 80 to 100%.
- Measurement (मापन), where 40% of students scored between 80 to 100%.
- Addition- subtraction (बेरीज वजाबाकी), where 43% students scored between 80-100%.

| Competency | 0-30% | 30-60% | 60-80% | 80-100% |
|---------------------|-------|--------|--------|---------|
| मापन | 11% | 18% | 31% | 40% |
| संख्याद्यान | 21% | 23% | 20% | 36% |
| बेरीज वजाबाकी | 15% | 22% | 20% | 43% |
| गुणाकार, भागाकार | 12% | 18% | 24% | 47% |
| अपूर्णांक | 19% | 35% | 26% | 21% |
| माहितीचे व्यवस्थापन | 19% | 13% | 23% | 46% |

Table 13: Students numeracy competencies scores in 2023-2024

3.4. Grade 7

The Grade 7, schedule had only one major section i.e. overall Foundational Literacy and Numeracy (FLN), over which the data is available for two years (2022-23 and 2023-24) for six common jurisdictions (*Pune ZP, PCMC, Nashik MC, Nashik ZP, Chandrapur ZP and Nagpur ZP*). The emerging insights are presented below.

Overall Foundational Literacy and Numeracy (FLN)

Change in literacy and numeracy outcomes over the last two assessment years.

As regards the combined FLN outcomes, the overall scores have witnessed significant⁹⁷ increase from 42% in 2022-2023 to 49% in 2023-24. Thus, indicating in overall improvement in the FLN outcomes of the Grade-7 students.

Component-wise

- Literacy score has significantly⁹⁸ increased from 45% in 2022-23 to 50% in 2023-24.
- Numeracy score has increased significantly⁹⁹ from 39% in 2022-23 to 48% in 2023-24.

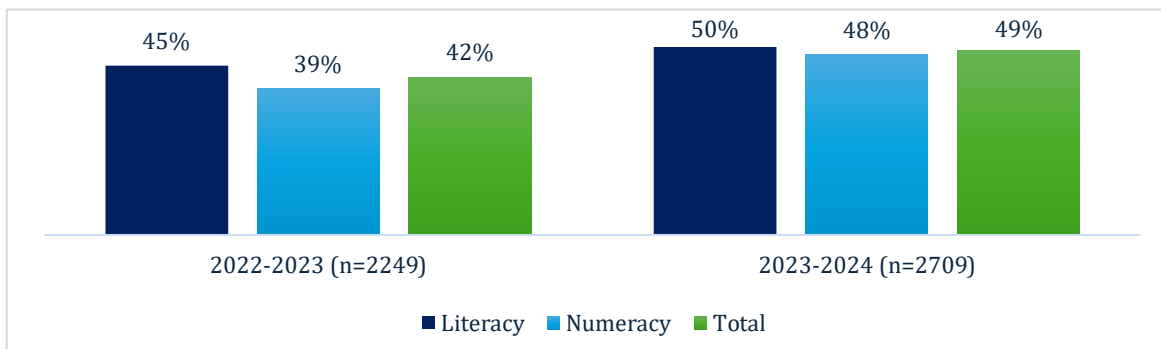


Figure 29: Change in literacy and numeracy outcomes over last two assessment years.

Composite literacy and numeracy competencies score in 2023-2024

Overall, in 2023-24, only 6% Grade-7 students (7% female and 5% male) achieved a composite score in the range of 80% to 100%. Another 25% students (26% female and 24% male), scored in the range of 60% to 80%. Thus, indicating that only about a third (31%) students compositely scored in the range of 60% to 100%.

As presented in figure below, majority (69%) of the students scored in the range of 0% to 60%, with 17% students scoring in the range of 0% to 30% (15% female and 20% male). *This aspect needs special emphasis going forward.*

Geography/jurisdiction-wise:

- The highest performing geography was Nashik ZP where 17% students scored in the range of 80% to 100%. Comparatively, the lowest performing one was PCMC, where none of the students scored in the range of 80% to 100%.

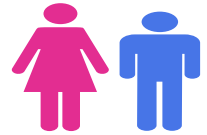
⁹⁷ value of z is -4.9249. The value of p is < .00001. The result is significant at p < .05 (Two-tailed)

⁹⁸ value of z is -3.5091. The value of p is .00044. The result is significant at p < .05. (Two-tailed)

⁹⁹ value of z is -6.3571. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

Gender-wise:

- The best performance of the female students (those who score in the range of 80% to 100%) was found in Nashik ZP (19%); and the lowest performance were found in Nagpur-MC (0%), PCMC (0%) and Chandrapur ZP (1%).
- The best performance of the male students (those who score in the range of 80% to 100%) was also found in Nashik-ZP (14%); and the lowest performance were found in Chandrapur (2%), Nagpur MC (2%) and Pune ZP (2%).
- *Comparatively across all geographies/jurisdictions the female students (7%) performed comparatively better than the male students (5%), when it comes to composite scoring between 80% to 100%.*



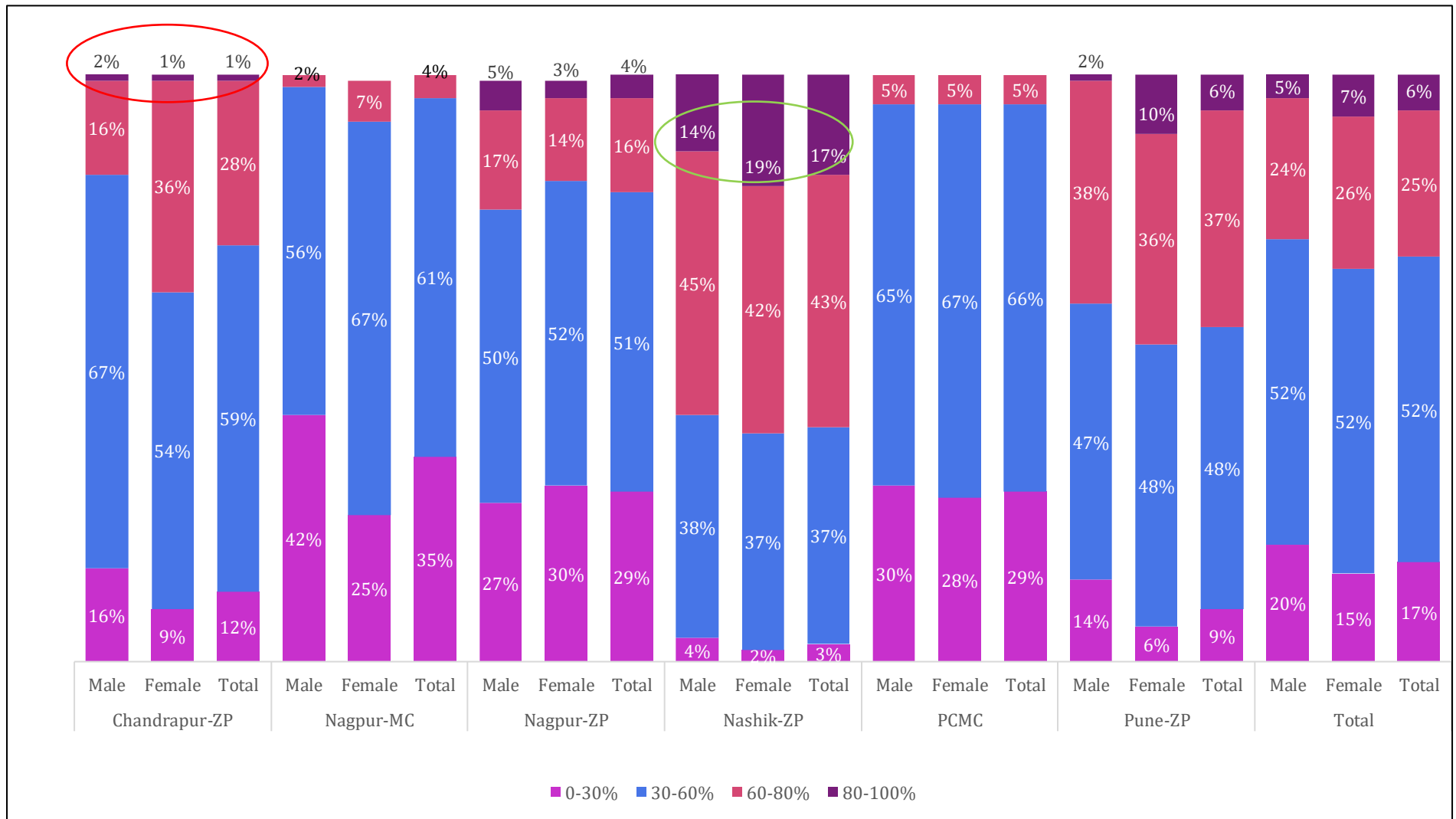


Figure 30: Composite numeracy and literacy competencies score -jurisdiction & gender-wise 2023-2024

Change in composite literacy and numeracy score over last two assessment years.

When compared across last two assessment years (2022-23 and 2023-24), there is an *improvement in the composite score of Grade-7 students.*

Component-wise:

- In literacy outcomes, the proportion of students scoring in the range of 80% to 100%, increased significantly¹⁰⁰ from 0% in 2022-23 to 2% in 2023-24.
- In numeracy outcomes, the proportion of students scoring in the range of 80% to 100%, increased significantly¹⁰¹ from 1% in 2022-23 to 11% in 2023-24.

Table 14: Composite literacy and numeracy score over last two assessment years

| Competency/ Score Ranges/ Year | | | Numeracy | | | | | | | |
|--------------------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | | 0-30% | | 30-60% | | 60-80% | | 80-100% | |
| | | | 2022-2023 | 2023-2024 | 2022-2023 | 2023-2024 | 2022-2023 | 2023-2024 | 2022-2023 | 2023-2024 |
| Literacy | 0-30% | 2022-2023 | 337(15%) | | 85 (4%) | | 1 (0%) | | 0 (0%) | |
| | | 2023-2024 | | 239(11%) | | 134(5%) | | 5(0%) | | 3(0%) |
| | 30-60% | 2022-2023 | 325 (14%) | | 986 (44%) | | 141 (6%) | | 14 (1%) | |
| | | 2023-2024 | | 325(12%) | | 890(33%) | | 280(10%) | | 52(2%) |
| | 60-80% | 2022-2023 | 9 (0%) | | 206 (9%) | | 121 (5%) | | 14 (1%) | |
| | | 2023-2024 | | 12(0%) | | 189(7%) | | 261(10%) | | 208(8%) |
| | 80-100% | 2022-2023 | 1 (0%) | | 5 (0%) | | 4 (0%) | | 0 (0%) | |
| | | 2023-2024 | | 0(0%) | | 3(0%) | | 15(1%) | | 39(1%) |

However, there is a notable increase from 2022-23 to 2023-24 in proportion of students in the range of 60% to 80%. Thus, at an aggregate it can be said that there has been an improvement in the FLN scores from 2022-23 to 2023-24.

¹⁰⁰ value of z is -6.7437. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

¹⁰¹ value of z is -14.2564. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

Change in literacy competencies scores over the last two assessment years.

The insights emerging from comparison of literacy sub-competencies scores, indicate a consistent increase from assessment year 2022-23 to 2023-24.

- As regards 'Simple', the average score of students increased significantly¹⁰² from 59% in 2022-2023, to 65% in 2023 -2024.
- In Grammar, the average score of students increased significantly¹⁰³ from 37% in 2022-23 to 48% in 2023-24.
- In Vocabulary, the average score of students increased significantly¹⁰⁴ from 40% in 2022-23 to 50% in 2023-24.
- In Complex, the average score of students increased significantly¹⁰⁵ from 33% in 2022-23 to 48% in 2023-24.
- However, in Story, the average score of students decreased significantly¹⁰⁶ from 21% in 2022-23 to 17% in 2023-24. Thus, it emerges that Story is an aspect, which needs specific emphasis for Grade-7 students.

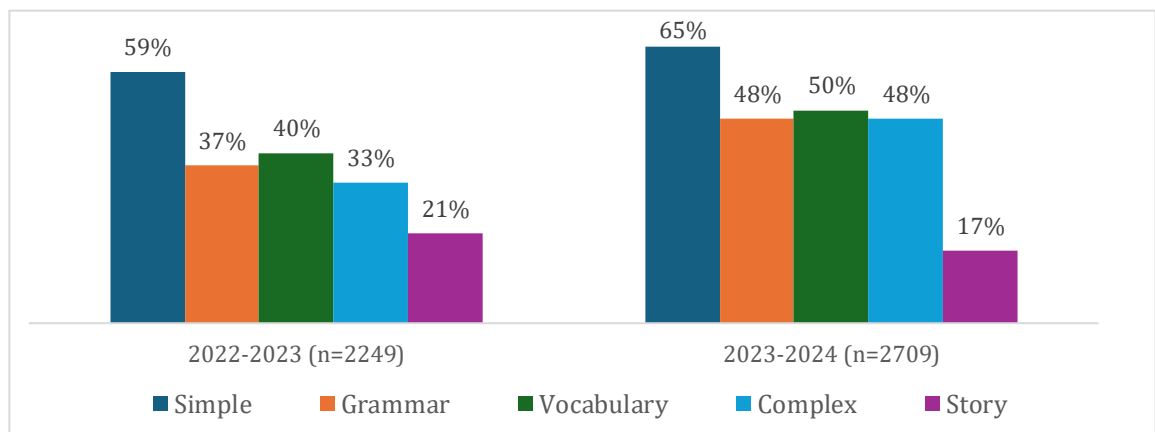


Figure 31: Change in literacy competencies scores over last two assessment years.

Literacy competency score jurisdictions and gender-wise

The geography/jurisdiction-wise analysis of 2023-24 data for literacy competencies, brings to fore that:

- Nashik ZP fares the best with an average score of 60%.
- Comparatively, the lowest performing geography/jurisdiction- is Nagpur MC with average score of 37%.

Gender-wise:

- The geography/jurisdiction where the female students scored the highest is Nashik ZP, where the average score of female students was 61%. The lowest performing geography/jurisdiction in this regard was found to be Nagpur MC, where the average score of female students was 42%.

¹⁰² value of z is -4.3394. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

¹⁰³ value of z is -7.7885. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

¹⁰⁴ value of z is -7.04. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

¹⁰⁵ value of z is -10.6833. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

¹⁰⁶ value of z is 3.5877. The value of p is .00034. The result is significant at p < .05. (Two-tailed)

- The geography/jurisdiction where the male students scored the highest is also the Nashik ZP, where the average score of male students was 58%. The lowest performing geography/jurisdiction in this regard was found Nagpur MC, where the average score of male students was 33%.
- At an aggregate, the female students (52%) performed significantly¹⁰⁷ little better than the male students (48%).

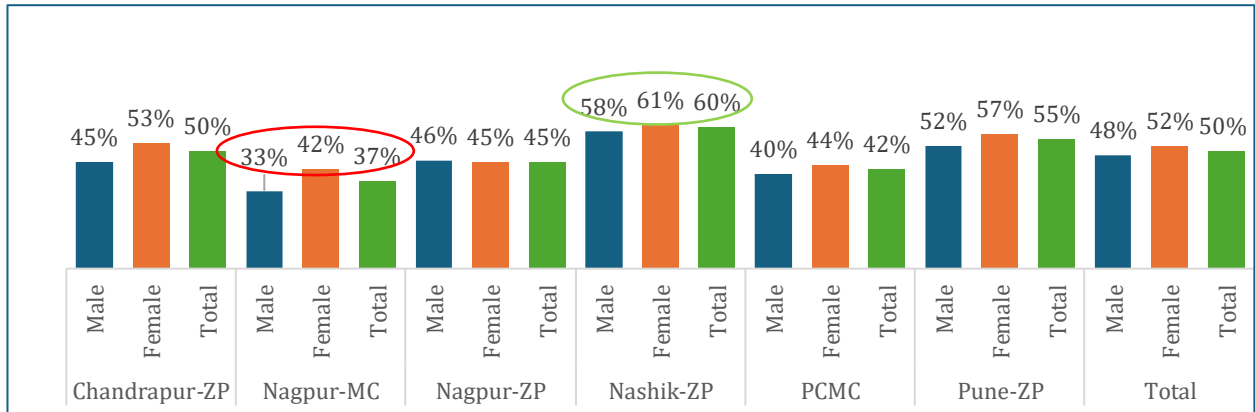
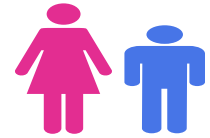


Figure 32: Literacy competency score- jurisdiction & gender-wise 2023-2024

Students' literacy sub-competencies scores in 2023-2024

The analysis of scores for literacy sub-competencies, highlights that the students excelled the most in following sub-competency:

- Vocabulary, where 27% students scored between 80-100%.
- Simple, where 26% students scored between 80% to 100%.

However, a significant portion of students faced challenges in following sub-competencies:

- Story, 1% students scored between 80 to 100%.
- Complex, 6% students scored between 80 to 100%.
- Grammar, where 16% students scored between 80% to 100%.

At an aggregate, going forward, special emphasis is needed on all literacy sub-competencies for Grade-7 students.

Table 15: Students literacy sub-competencies scores in 2023-2024

| Competency | 0-30% | 30-60% | 60-80% | 80-100% |
|-------------------|------------|--------|--------|------------|
| Simple | 6% | 29% | 39% | 26% |
| Grammar | 37% | 30% | 17% | 16% |
| Vocabulary | 27% | 46% | 0% | 27% |
| Complex | 31% | 44% | 19% | 6% |
| Story | 75% | 20% | 4% | 1% |

¹⁰⁷ value of z is 2.0713. The value of p is .03846. The result is significant at $p < .05$. (Two-tailed)

Change in numeracy competencies scores over the last two assessment years.

The insights emerging from comparison of numeracy competencies scores for last two assessment years, also indicate an improvement (figure below):

- Number Sense: the students average score was 41% in 2022-23, which increased significantly¹⁰⁸ to 52% in 2023-24.
- Addition-Subtraction: the average score of students was 67% in 2022-23, which increased significantly¹⁰⁹ to 73% in 2023-24.
- Measurement: the students average score was 29% in 2022-23, which increased significantly¹¹⁰ to 40% in 2023-24.
- Multiplication-Division: the students' average score was 55% in 2022-2023, which increased significantly¹¹¹ to 59% in 2023-2024.
- Fraction competency: the students average score was 23% in 2022-2023, which increased significantly¹¹² to 35% in 2023-2024.
- Geometry: the average score of students was 25% in 2022-2023, which increased significantly¹¹³ to 45% in 2023-2024.
- Data competency: the average score of students was 39% in 2022-2023, which increased significantly¹¹⁴ to 45% in 2023-2024.

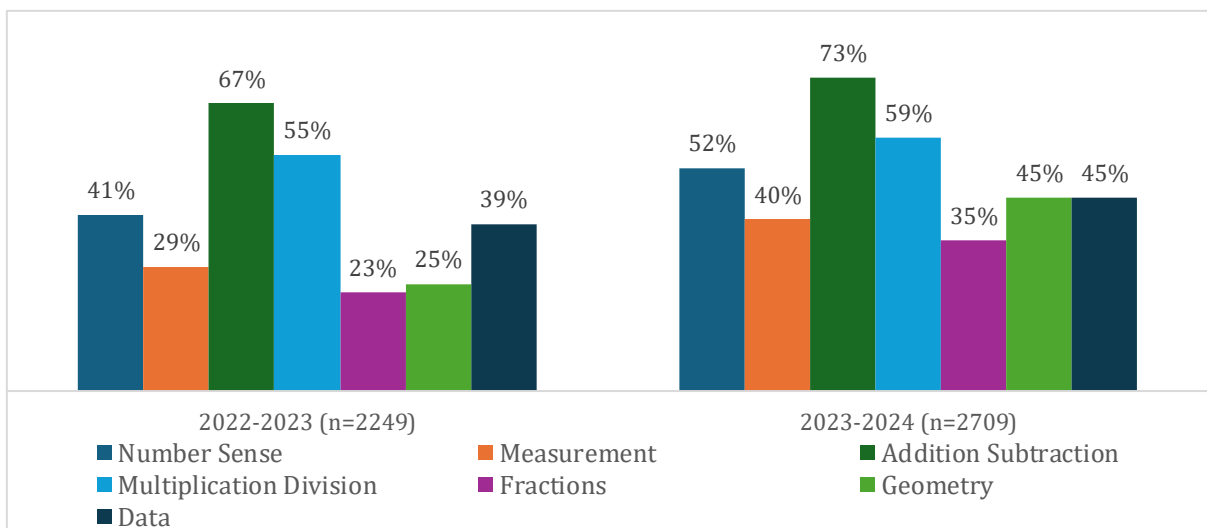


Figure 33: Change in numeracy competencies scores over last two assessment years.

Numeracy competency score- jurisdictions and gender wise 2023-2024

The geography/jurisdiction-wise analysis of 2023-24 data for numeracy competencies, brings to fore that:

- Nashik ZP fares the best with an average score of 66%.
- Comparatively, the lowest performing geography/jurisdiction- is Nagpur MC with average score of 32%.

¹⁰⁸ value of z is -7.7259. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

¹⁰⁹ value of z is -4.602. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

¹¹⁰ value of z is -8.0839. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

¹¹¹ value of z is -2.8338. The value of p is .00466. The result is significant at p < .05. (Two-tailed)

¹¹² value of z is -9.2189. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

¹¹³ value of z is -14.6125. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

¹¹⁴ value of z is -4.2576. The value of p is < .00001. The result is significant at p < .05. (Two-tailed)

Gender-wise:

- The geography/jurisdiction where the female students scored the highest is Nashik-ZP, where the average score of female students was 65%. The lowest performing geography/jurisdiction in this regard was found to be PCMC, where the average score of female students was 32%.
- The geography/jurisdiction where the male students scored the highest is also the Nashik-ZP, where the average score of male students was 67%. The lowest performing geography/jurisdiction in this regard was found Nagpur MC, where the average score of male students was 29%.
- *At an aggregate, the female students (49%) comparatively slightly better than male students (48%)¹¹⁵.*

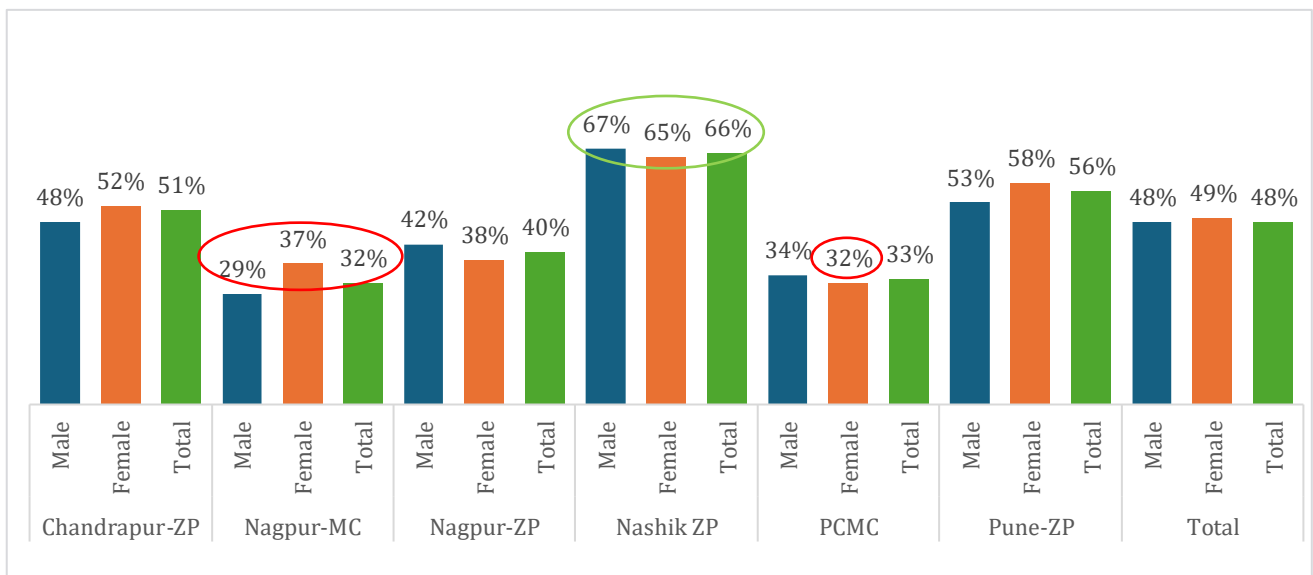
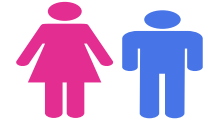


Figure 34: Numeracy competency score - jurisdiction & gender-wise 2023-2024

Students' numeracy competencies scores in 2023-2024

The analysis of scores for numeracy sub-competencies, highlights that the students excelled the most in following sub-competency:

- Multiplication-Division, where 31% students scored between 80 to 100%.
- Number sense and Addition-Subtraction, where 27% and 28% students, respectively, scored between 80 to 100%.

However, a significant portion of students faced challenges in following sub-competencies, indicating that, going forward, these sub-competencies will need special emphasis for Grade-7 students:

- Data, where 6% of students scored between 80 to 100%.
- Fractions, where 10% of students scored between 80 to 100%.
- Geometry, where 11% of students scored between 80 to 100%.

¹¹⁵ value of z is 0.518. The value of p is .60306. The result is not significant at $p < .05$. (Two-tailed)

- Measurement, where 14% of students scored between 80 to 100%.

Table 16: Students numeracy competencies scores in 2023-2024

| Competency | 0-30% | 30-60% | 60-80% | 80-100% |
|--------------------------------|--------------|---------------|---------------|----------------|
| Number Sense | 24% | 22% | 27% | 27% |
| Measurement | 37% | 36% | 13% | 14% |
| Addition/ Subtraction | 7% | 30% | 36% | 28% |
| Multiplication/Division | 20% | 28% | 21% | 31% |
| Fractions | 52% | 27% | 10% | 10% |
| Geometry | 35% | 43% | 12% | 11% |
| Data | 27% | 51% | 15% | 6% |

3. Key findings and Conclusion

Overarchingly there is a notable improvement in the FLM outcomes of the students from 2021-22 to 2023-24 across all the geographies/jurisdictions. However, on some FLM competencies/ sub-competencies, while there is improvement from the base academic year of 2021-22 to 2022-23; the outcomes for some, witness a decline or remain the same from 2022-23 to 2023-24.

Jurisdiction/geography-wise, for Grade 1, 3, 5, Pune ZP comes across as the best performing, while the Nagpur MC/ZP are comparatively the lowest performing jurisdictions/geographies. However, in case of Grade-7, Nagpur-MC is the best performing jurisdiction/geography, and the lowest performing one is Nashik ZP. ***At an aggregate, comparatively, the Pune ZP has fared the best among the jurisdiction/geographies covered for the students' assessment. The jurisdictions in Nagpur, that is, the Nagpur-MC and Nagpur-MC, have performed comparatively on the lower side.*** Thus, need special attention in the ensuing academic years.

Gender-wise, for majority of the FLN outcomes, the female students have either scored better or at par with the male students across all geographies.

Grade-wise key findings are presented hereunder:

- **Grade-1:** Though the outcomes have improved when status in 2021-22 is compared to 2023-24, however, there is a decline when 2022-23 outcomes are compared to 2023-24. Thus, highlighting the need to lay emphasis on both literacy and numeracy aspects of FLN. Gender-wise analysis, in Grade 1, female students performed slightly better in literacy competencies, while male students showed similar performance in numeracy. Specific literacy and numeracy sub-competencies where the outcomes were comparatively on the lower side and need emphasis going-forward include- oral language development; self-expression; numerology; and Balvatika literacy sub-competencies- oral language development, self-expression, listening comprehension, and working with the books.
- **Grade 3:** The overall FLN scores have witnessed growth, indicating an improvement in overall literacy and numeracy over the last three academic years. Gender-wise, female students performed slightly better in literacy competencies, while male students performed better in numeracy. There has been an overall improvement in both literacy and numeracy competencies over the last two years, with Grade-2 level competencies having improved. However, competencies and sub-competencies that need specific emphasis going forward include- numeracy competency; sub-competencies- self-expression, numerology.
- **Grade 5:** Encouragingly, the FLN scores have consistently increased over the last three assessment years. Gender-wise, female students performed better both in literacy and numeracy than male students.
- **Grade 7:** There has been an improvement in the overall FLN scores over the last two assessment years. Gender-wise, female students performed better both in literacy and numeracy than male students. There is a notable improvement in composite scores from 2022-23 to 2023-24, but only a small percentage of students achieved high competency levels, indicating overall progress. Some sub-competencies that need emphasis going forward include story comprehension, fractions, and geometry.