

School-Based Assessment



*Piloting an adapted platform in Punjab to strengthen
assessment data use to improve instructional practices*

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List of Abbreviations

#	Abbreviation	Full Form
1	B-TAG	Bridging Technical Assistance for Governments
2	FCDO	Foreign, Commonwealth and Development Office
3	PECTAA	Punjab Education, Curriculum, Training and Assessment Authority
4	PEC	Punjab Examination Commission
5	SBA	School-Based Assessment
6	SED	School Education Department
7	SLO	Student Learning Outcome

1. Executive Summary

Punjab's School-Based Assessment (SBA) system has played an important role in monitoring student learning across public schools. However, while the existing system provides valuable school-level performance information, it offers limited diagnostic evidence to help teachers identify specific learning gaps and provide timely remedial support. Recognising the need to strengthen the instructional value of assessment data, the Punjab Education, Curriculum, Training and Assessment Authority (PECTAA), with technical support from the FCDO-funded Bridging Technical Assistance for Governments (B-TAG), adapted the SBA model to generate item-level and Student Learning Outcome (SLO)-level evidence that can better inform classroom teaching and learning.

The pilot covered Grade 6 students and teachers in 100 public sector middle schools across three districts of Punjab: Bahawalpur, Chakwal, and Sheikhpura. The sample was designed to maintain a 70:30 female-to-male school ratio. A total of 838 assessment items were developed across Grade 6 English, Mathematics and General Science and reviewed by PECTAA subject specialists before piloting. Grade 6 teachers in participating schools received one-day blended training for administering monthly formative assessments, entering item-level data, and using diagnostic findings to inform classroom instruction. The adapted SBA platform was piloted from January to March 2026, with monthly assessments conducted in February and March. Results were analysed across both rounds, disaggregated by subject, gender, district and SLO.

The pilot was designed not only to digitise assessment processes, but to test whether more detailed assessment evidence could strengthen the feedback loop between assessment, classroom instruction and student learning. By providing teachers with timely diagnostic reports highlighting specific learning gaps, the adapted SBA model aimed to support more targeted lesson planning, remedial teaching and continuous monitoring of student progress.

Assessment data of a total of 6,192 students was collected in February 2026 and 6,488 in March 2026. In February, students recorded the highest average score in English (77.46%), followed by Mathematics (75.08%) and Science (74.42%). In March, students recorded the highest average score in English (76.95%), followed by Science (76.06%) and Mathematics (75.34%). Monthly comparison revealed gains in learning outcomes. Gender-disaggregated analysis found that female students recorded comparatively larger gains in Mathematics and Science, while male students' performance remained relatively stable across subjects. District-level analysis showed that Bahawalpur improved across all three subjects, Sheikhpura recorded moderate gains in Mathematics and Science, while Chakwal showed relatively limited improvement between the two rounds.

Implementation surfaced several operational challenges that should inform future scale-up: a reduction in the number of schools with complete, matched analytical records (87 of the 100 originally sampled), reflecting gaps in data completeness and timely reporting; the need for stronger teacher capacity to translate diagnostic findings into classroom remediation, rather than software use alone; and the importance of sustained technical and operational support to maintain data quality and system use beyond the pilot period.

The pilot demonstrates that an item-level, SLO-based SBA model is both operationally feasible in Punjab's public schools and capable of generating measurable improvements in student learning outcomes. The variation in outcomes across subjects, districts and student groups underscores the value of the diagnostic data generated. It reinforces the case for institutionalising the model, if data quality, teacher capacity and technical support are strengthened. Building on these findings, the report recommends: institutionalising monthly SBA implementation within routine academic processes; strengthening teachers' capacity to translate diagnostic data into instructional and remedial practice; introducing structured remedial support mechanisms based on SBA findings; strengthening data quality assurance and completeness of reporting; developing district- and school-level performance dashboards; providing continuous technical and operational support to schools; and pursuing a phased, evidence-informed scale-up of the adapted SBA model to additional schools and grades.

Scope of the SBA Pilot

Districts: 3 (Bahwalpur, Chakwal, Sheikhpura)

Schools targeted: 100 (70 girls' schools, 30 boys' schools)

Teachers trained: 219 (156 females, 63 males)

Total Schools with assessment data received: 87 (24 boys' schools, 63 girls' schools)

Students assessed in February 2026: 6,192 (4,720 girls, 1,472 boys)

Students assessed in March 2026: 6,488 (4,922 girls, 1,546 boys)

2. Introduction

School-Based Assessment is a form of formative assessment conducted by teachers at the school level to monitor student learning and inform classroom teaching practices. Beyond its classroom function, SBA data can also serve broader system-level purposes by enabling education authorities to identify learning gaps, provide targeted support to teachers and schools, and strengthen curriculum design, textbook development, teacher training programmes, and assessment frameworks. In this way, SBA contributes to establishing a continuous feedback loop between classroom learning and education policy and planning.

In Punjab, SBA was introduced by the Punjab Examination Commission, now part of the PECTAA, as a mechanism for conducting assessments at the school level and collecting student performance data across the province.

The implementation of SBA initially began in 2021 with Grades 3-8. Since 2023, term-wise assessments from Grades 1 to 8 have been conducted. To support implementation, PEC developed a comprehensive item bank that was shared with teachers. They were trained to develop examination papers using these assessment items, administer the assessments at the school level, and upload student results into the system. This approach provided PEC with valuable visibility into school performance and learning trends across districts and grades.

However, this model did not disaggregate results by SLO or generate data on a monthly basis. Teachers had no visibility of their own results, and only school-average scores were accessible to administrators. In the absence of item- or SLO-level data, PECTAA had no basis on which to design targeted teacher support, and the feedback loop between assessment and instruction remained incomplete. Consequently, there emerged a need to revisit and revise the SBA model to make it more diagnostic, competency-based, and useful for improving teaching and learning outcomes.

Against this backdrop, the FCDO-funded B-TAG programme supported the enhancement of the SBA platform by introducing item-level data collection and analysis. The adapted model was piloted in 100 public schools across three districts of Punjab. The adapted system captures student responses at the item level, and enables more granular analysis of learning outcomes providing richer evidence to inform instructional support and decision-making.

This report examines the implementation and effectiveness of the adapted SBA model in the pilot schools, identifies key lessons and implementation challenges, and presents actionable recommendations for strengthening the system. The findings are intended to inform future policy and programmatic decisions and support the evolution of SBA into a robust assessment system that contributes to improved student learning and evidence-based educational planning at scale.

3. Pilot Design and Implementation Steps

With technical assistance from B-TAG, in consultations with PECTAA and the SED, the SBA system was adapted to incorporate item-level data collection and analysis. The following steps were undertaken to pilot the adapted SBA model.

3.1 Sample Selection and Coverage

A total sample of 100 public sector middle schools was initially selected for implementation of the adapted SBA model across three districts representing three regions of the province: North, South and Centre. The sample was designed to maintain a 70:30 distribution between female and male schools respectively.

Figure 1: Schools in Sample

This distribution ensured representation of both boys' and girls' schools within the pilot districts while maintaining greater representation of female schools in line with the intervention design.

District-wise distribution of sampled schools further indicates that Sheikhpura accounted for the largest share of schools included in the pilot, followed by Bahawalpur and Chakwal.

Figure 2: District & Gender wise Schools in Sample

The district and gender-wise distribution of schools is given below:

- a. **Bahawalpur:** 21 female schools and 11 male schools
- b. **Chakwal:** 12 female schools and 4 male schools
- c. **Sheikhupura:** 37 female schools and 15 male schools

Overall, the sample ensured geographical representation across the three pilot districts while maintaining the intended gender composition of schools.

3.2 Item bank and instructional material development

A series of item development workshops were conducted to develop a comprehensive SBA item bank for Grade 6 in English, Mathematics, and General Science. The items were aligned with the National Curriculum and mapped to relevant SLOs to ensure that assessment results could provide meaningful diagnostic information.

A total of 838 assessment items were developed across the three subjects for Grade 6, as shown below:

Table 1: Items Developed for Grade 6 across three subjects

All Grades	Grade 6
G. Science	251
Math	312
English	275
Total	838

To ensure the quality and validity of the assessment items, PECTAA convened a technical review workshop involving subject specialists and assessment experts. The review process focused on content accuracy, language clarity, cognitive appropriateness, alignment with SLOs and overall item quality. Feedback from the review was incorporated to strengthen the item bank prior to pilot implementation.

In addition to the item bank, supporting instructional materials were curated to help teachers interpret assessment results and use the findings to inform classroom instruction and remedial support for students.

3.3 SBA Software Adaptation

Following the finalisation of the SBA item bank and instructional resources, the SBA software was customised to support the adapted assessment model. The adaptation enabled item-level data entry, automated analysis, and reporting functionalities designed to generate actionable insights for teachers, headteachers, and education managers.

The updated platform supports the administration of monthly diagnostic assessments, student-level performance tracking, and analysis of learning outcomes at the SLO level. Beyond the aggregated score, the platform enables the identification of specific areas where students require additional support and provides evidence to guide instructional planning and targeted interventions.

The customised SBA platform was subsequently deployed in Punjab as part of the pilot implementation in selected schools, laying the foundation for a more diagnostic and data-driven approach to assessment and learning improvement.



School Login

Access your School Based Assessment portal

EMIS Code

Password

Login to Portal

[Forgot Password?](#)

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SBA

GPS No.1 Hayatabad

- Dashboard
- Add Students
- Manage Students
- Generate Papers
- Add Result
- View Result

Welcome , GPS No.1 Hayatabad
GPS Code: 123456

22

Total Students

5

Total Teachers

Peshawar

District

School Information

School Name: GPS No.1 Hayatabad

School Level: Primary

Zone: Southern Zone

Element: Peshawar

School Location: 1234

Number of Teachers: 5

Number of Students: 22

Head Teacher Information

Head Teacher Name: Dr. Gulistan

Phone: 0333-1234567

Email: N/A Provided

Account

SBA

GPS No.1 Hayatabad

- Dashboard
- Add Students
- Manage Students
- Generate Papers
- Add Result
- View Result

Add Student Result

Paper Type: Termwork

Year: Grade 4

Grade: Grade 4

Subject: Maths

Student	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63	Q64	Q65	Q66	Q67	Q68	Q69	Q70	Q71	Q72	Q73	Q74	Q75	Q76	Q77	Q78	Q79	Q80	Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90	Q91	Q92	Q93	Q94	Q95	Q96	Q97	Q98	Q99	Q100
Ali	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

SBA

GPS No.1 Hayatabad

- Dashboard
- Add Students
- Manage Students
- Generate Papers
- Add Result
- View Result

Generate Paper

Class: Grade 4

Subject: Maths

Term: Termwork

Assessment Year: 2025

Section A - Multiple Choice Questions

Q1. Choose the correct answer for the following.

Q2. Choose the correct answer for the following.

Q3. Choose the correct answer for the following.

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Section B - Short Answer Questions

Q1. Write a short paragraph on the following topic.

Q2. Write a short paragraph on the following topic.

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Q64. Write a short paragraph on the following topic.

Q65.

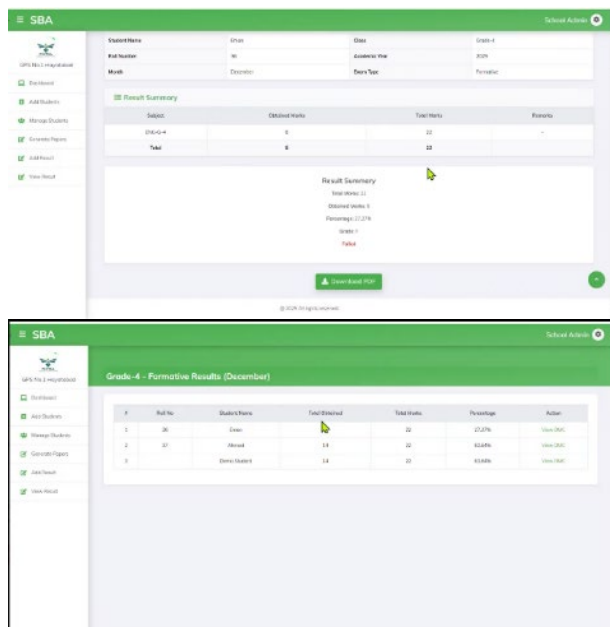


Figure 3: SBA Platform - Overview of Assessment generation and Data Entry

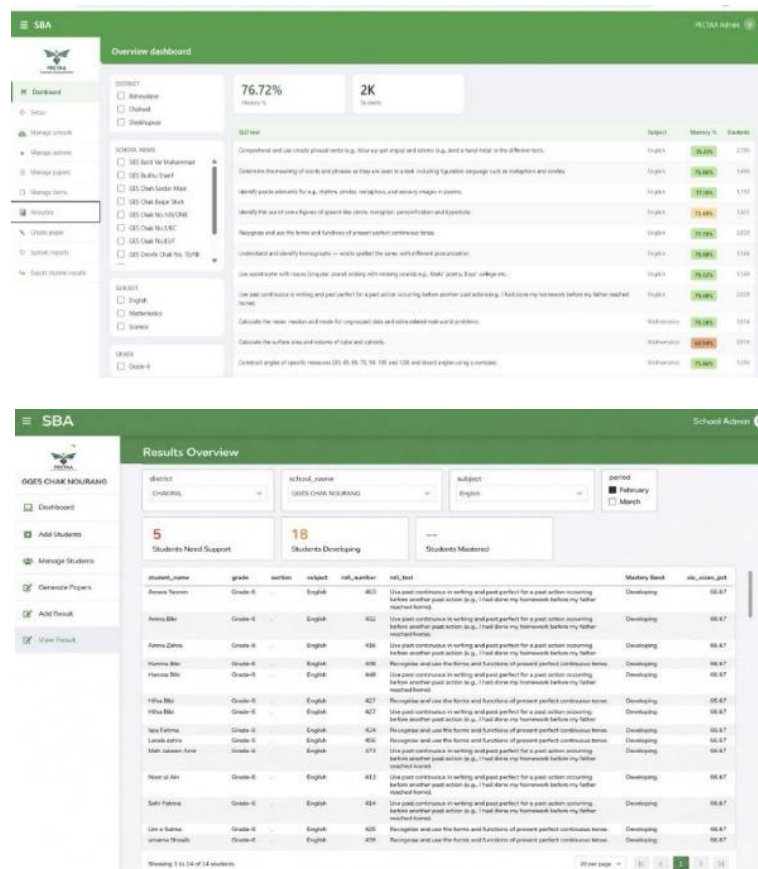


Figure 4: Results Display and identification of areas of improvement

3.4 Teacher Training

To support the effective implementation of the adapted SBA model, a blended teacher training programme was delivered for Grade 6 teachers in the selected pilot schools across Punjab.

The training aimed to strengthen teachers' capacity to conduct regular formative assessments using the SBA platform and to utilise assessment evidence for data-driven instructional decision-making.

Before the launch of the platform, Grade 6 teachers from 100 participating schools were invited to district PECTAA offices for one day and trained through a blended learning programme. The training focused on the administration of monthly formative assessments, item-level data entry, interpretation of assessment findings, and the use of diagnostic information to identify student learning gaps and plan targeted instructional support. Emphasis was placed on helping teachers move beyond the reporting of aggregate scores and use assessment results to improve classroom teaching and learning.

As part of the training package, a series of instructional videos was developed and shared with participating teachers. These videos provided step-by-step guidance on navigating the SBA software, uploading item-wise student results, accessing and interpreting diagnostic reports, and analysing performance against specific SLOs. In addition, instructional materials were provided to support teachers in addressing identified learning gaps through targeted classroom instruction and remediation.

Table 2: Gender-Disaggregated Data of Teachers Trained District-Wise

Sr.#	District	Number of Teachers Participated		
		Male	Female	TOTAL
1	Bahawalpur	22	41	63
2	Chakwal	06	26	32
3	Sheikhupura	35	89	124
TOTAL		63	156	219



Figure 5: Teacher Training on SBA in Sheikhupura and Chakwal – January 2026

3.5 Assessment-driven instructional practices

The customised SBA system was piloted in 100 schools starting in January 2026. Monthly assessments were subsequently conducted in February and continued through to the end of the academic year in March 2026, allowing for two cycles of assessment, feedback, and instructional adjustment within a short implementation period.

Throughout the pilot, the B-TAG programme provided ongoing technical and operational support to the SED and the PECTAA. This support included assistance with data collection processes, system use and troubleshooting, and the generation and interpretation of assessment reports.

In addition, technical guidance was provided to strengthen the use of SBA data for multiple purposes, including classroom-level instructional improvement, targeted student support, teacher professional development, and evidence-based decision-making at school, district, and provincial levels. This continuous support was aimed at ensuring effective implementation of the adapted SBA model and promoting its sustainability beyond the pilot phase.

The adapted platform moved beyond reporting aggregate scores towards using item-level evidence to directly inform classroom instruction. In the participating schools, the system disaggregated results to the level of individual assessment items and SLOs, giving teachers visibility into precisely which competencies their students have and have not mastered. Teachers could identify specific learning gaps as they emerged, adjust lesson planning and classroom instruction accordingly, and target remedial support to the students and topics that need it most using the instructional material provided.

3.6 Monitoring & Evaluation

To assess the effectiveness of the adapted SBA model, assessment data collected through the platform were systematically analysed to measure student learning progress and identify key areas requiring instructional improvement. The analysis focused on item-level and SLO-level performance, enabling a more diagnostic understanding of learning gaps across participating schools.

Findings from the monitoring and evaluation process were used to generate insights on implementation fidelity, data quality, and patterns of student performance. These insights are intended to inform iterative refinements to both the assessment tools and the implementation processes, including improvements in item design, teacher support mechanisms, and data use practices at the school level.

Following the pilot phase of the adapted SBA platform in Punjab, the intention is to institutionalise SBA as a regular component of the provincial assessment system. This would ensure sustained use of formative assessment data to strengthen teaching and learning practices, support evidence-based decision-making, and improve overall system responsiveness to student learning needs.

4. Results and Analysis

This section presents the detailed results of the SBA pilot in Punjab, covering student participation, subject- and SLO-level performance, and gender- and district-disaggregated findings for both assessment rounds.

4.1 School Coverage

The numbers of schools that recorded student assessment data for both months came out to be 87. Of the schools included in the final analytical dataset, 63 were female schools and 24 were male schools. Female schools accounted for 72 % of the achieved coverage, while male schools represented 28 %.¹

Figure 6: School Gender Wise Coverage

District-wise school coverage i.e., the number of schools from which complete repeated assessment records were obtained is shown in the Figure 7 below:

¹ Although the pilot initially targeted 100 schools, Month-1 and Month-2 SBA data was successfully obtained from 87 schools, which constitute the analytical sample used for the analysis.

Figure 7: District & School Gender wise Coverage

District-wise coverage shows that:

- **Bahawalpur** contributed 30 schools, including 21 female and 9 male schools
- **Chakwal** contributed 15 schools, including 11 female and 4 male schools
- **Sheikhupura** contributed 42 schools, including 31 female and 11 male schools

4.2 Students Assessed

A total of 6,192 students (4,720 girls, 1,472 boys) were assessed during February 2026 across the three participating districts. Female students accounted for 76% of all assessed students, while male students represented 24%.

Figure 8: Students Assessed in Month-1 by Gender

A total of 6,488 students (4,922 girls, 1,566 boys) were assessed during March 2026 across the three participating districts. Female students accounted for 76% of all assessed students, while male students represented 24%.

Figure 9: Students Assessed in Month-2 by Gender

4.3 Month 1 (February 2026) Results

Subject-wise Average Scores (Overall)

Overall, students recorded the highest average score in English (77.46%), followed by Mathematics (75.08%) and Science (74.42%).

Figure 10: Month-1 Average Scores by Subject (Overall)

Gender-wise Results

Figure 11: Average Scores by Subject for Female Students

Among female students, English recorded the highest average score (77.62%), followed by Mathematics (74.50%) and Science (73.11%). The results indicate that English was the strongest-performing subject for female students during Month-1.

Figure 12: Month-1 Average Scores by Subject for Male Students

Among male students, Science showed the highest average score (78.56%), followed by Mathematics (77.08%) and English (76.96%). All three subject averages exceeded 76%, indicating consistently strong performance across the assessed subjects.

District-wise Results

Bahawalpur recorded its highest average score in Mathematics (82.53%), followed by English (80.80%) and Science (76.94%). All subject averages remained above 76%, with Mathematics showing particularly strong performance.

Figure 13: Month-1 Average Scores by Subject for District Bahawalpur

In Chakwal, students recorded the highest average score in Mathematics (75.96%), followed by Science (71.56%), while English recorded 70.35%. Mathematics was the strongest-performing subject within the district during Month-1.

Figure 14: Month-1 Average Scores by Subject for District Chakwal

In Sheikhupura, students achieved the highest average score in English (77.74%), followed by Science (74.15%) and Mathematics (71.44%). English emerged as the strongest-performing subject in the district during the reporting period.

Figure 15: Month-1 Average Scores by Subject for District Sheikhupura

SLO-wise Results

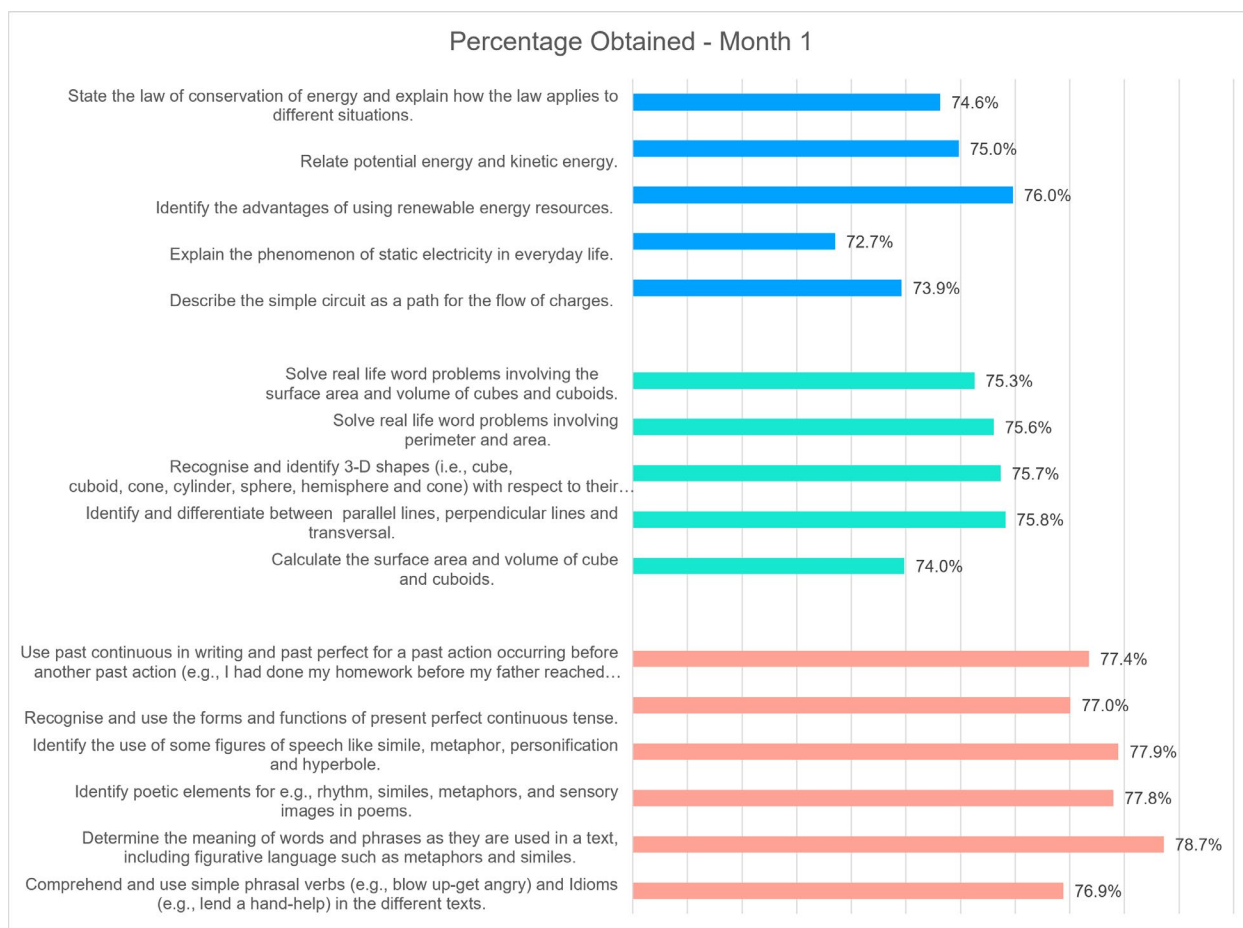


Figure 16: Month-1 SLO-wise Percentage Obtained

In English, highest performing SLO was **“Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes”** with average score 78.7% while lowest performing SLO was **“Comprehend and use simple phrasal verbs (e.g., blow up-get angry) and Idioms (e.g., lend a hand-help) in the different texts”** with an average score of 76.9%. English SLOs demonstrated consistently high performance, with relatively little variation across assessed competencies.

In Mathematics, highest performing SLO was **“Identify and differentiate between parallel lines, perpendicular lines and transversal”** with an average score of 75.8% while lowest performing SLO was **“Calculate the surface area and volume of cube and cuboids”** with an average score of 74.0%. Mathematics SLOs showed a narrow spread of scores, indicating relatively consistent student performance across the assessed learning outcomes.

In Science, highest performing SLO was **“Identify the advantages of using renewable energy resources”** with an average score of 76.0% while lowest scoring SLO was **“Explain the phenomenon of static electricity in everyday life”** with an average of 72.7%. Science SLOs exhibited slightly greater variation than English and Mathematics. The SLO-wise analysis provided a detailed view of performance across specific learning outcomes to support targeted instructional planning.

Table 3: Summary of the SLO-wise percentage marks obtained in February.

Sr. No.	Subject	SLO (full description)	Percentage Obtained - Month-1
1	English	Comprehend and use simple phrasal verbs (e.g., blow up-get angry) and Idioms (e.g., lend a hand-help) in the different texts.	76.9%
2	English	Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.	78.7%
3	English	Identify poetic elements for e.g., rhythm, similes, metaphors, and sensory images in poems.	77.8%
4	English	Identify the use of some figures of speech like simile, metaphor, personification and hyperbole.	77.9%
5	English	Recognise and use the forms and functions of present perfect continuous tense.	77.0%
6	English	Use past continuous in writing and past perfect for a past action occurring before another past action (e.g., I had done my homework before my father reached home).	77.4%
7	Mathematics	Calculate the surface area and volume of cube and cuboids.	74.0%
8	Mathematics	Identify and differentiate between parallel lines, perpendicular lines and transversal.	75.8%
9	Mathematics	Recognise and identify 3-D shapes (i.e., cube, cuboid, cone, cylinder, sphere, hemisphere and cone) with respect to their characteristics.	75.7%
10	Mathematics	Solve real life word problems involving perimeter and area.	75.6%
11	Mathematics	Solve real life word problems involving the surface area and volume of cubes and cuboids.	75.3%
12	Science	Describe the simple circuit as a path for the flow of charges.	73.9%
13	Science	Explain the phenomenon of static electricity in everyday life.	72.7%
14	Science	Identify the advantages of using renewable energy resources.	76.0%
15	Science	Relate potential energy and kinetic energy.	75.0%
16	Science	State the law of conservation of energy and explain how the law applies to different situations.	74.6%

4.4 Month - 2 (March 2026) Results

Subject-wise Average Scores (Overall)

Overall, students recorded the highest average score in English (76.95%), followed by Science (76.06%) and Mathematics (75.34%).

Figure 17: Month-2 Average Scores by Subject (Overall)

Gender-wise Results

Among female students, English recorded the highest average score (77.38%), followed by Science (75.68%) and Mathematics (75.22%). The results indicate that English was the strongest-performing subject for female students during Month-2.

Figure 18: Average Scores by Subject for Female Students

Among male students, Science achieved the highest average score (77.24%), followed by Mathematics (75.71%) and English (75.63%). Average scores across all three subjects exceeded 75%.

Figure 19: Month-2 Average Scores by Subject for Male Students

District-wise Results

Bahawalpur recorded its highest average score in Mathematics (81.00%), followed by English (79.56%) and Science (78.15%). All subject averages remained above 78%, with Mathematics demonstrating the strongest performance in the district.

Figure 20: Month-2 Average Scores by Subject for District Bahawalpur

In Chakwal, students recorded the highest average score in Mathematics (72.73%), followed by Science (70.51%), while English recorded 69.01%. Mathematics remained the highest-performing subject within the district during Month-2.

Figure 21: Month-2 Average Scores by Subject for District Chakwal

In Sheikhpura, students achieved the highest average score in English (77.59%), followed by Science (76.43%) and Mathematics (73.16%). English emerged as the strongest-performing subject in the district during the reporting period.

Figure 22: Month-2 Average Scores by Subject for District Sheikhupura

SLO-wise Results

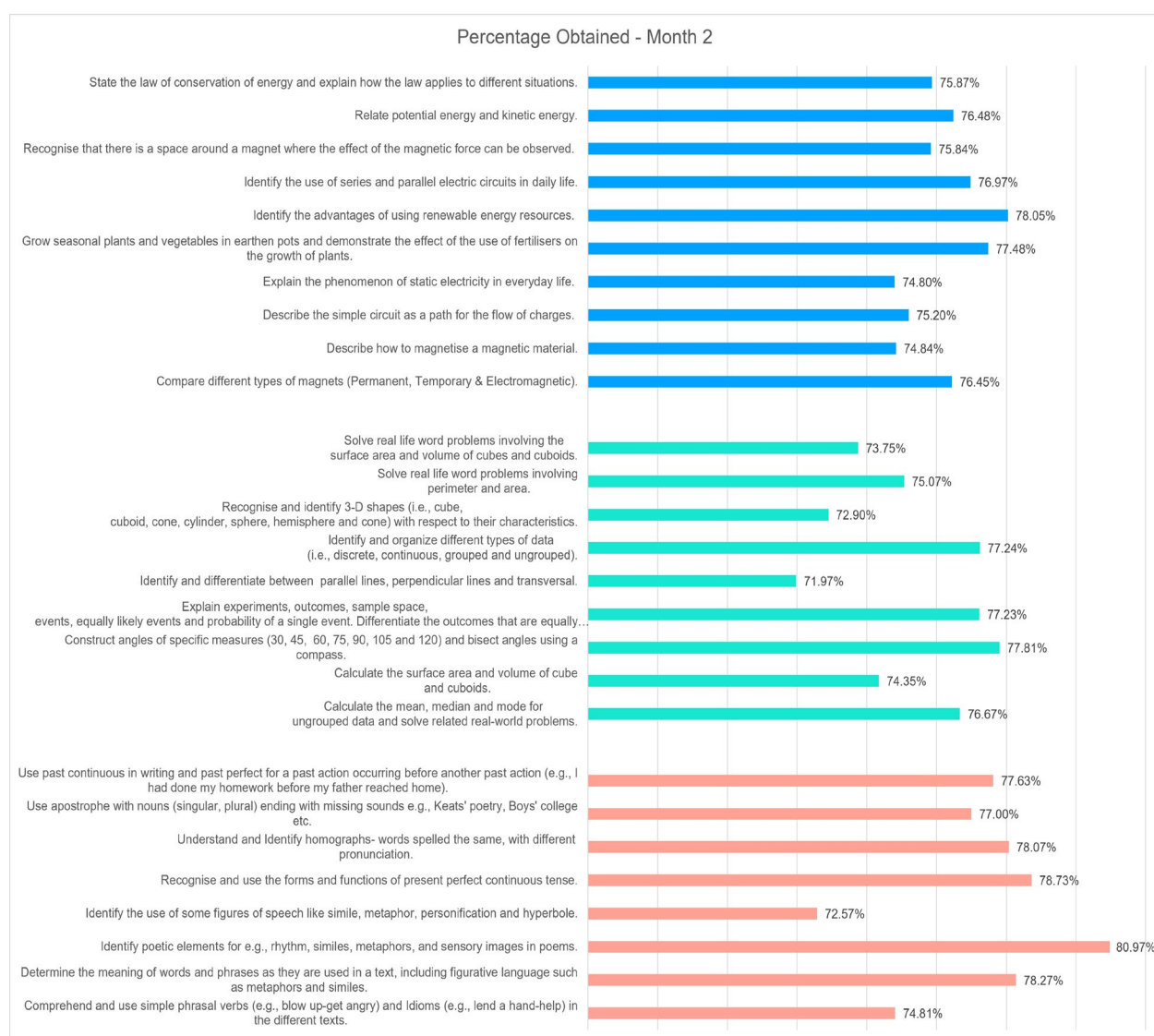


Figure 23: Month-2 SLO-wise Percentage Obtained

English SLOs displayed a broader range of performance across the assessed competencies. **“Identify poetic elements for e.g., rhythm, similes, metaphors, and sensory images in poems”** recorded the highest percentage (80.97 %), while **“Identify the use of some figures of speech like simile, metaphor, personification and hyperbole”** recorded the lowest percentage (72.57 %).

Among the assessed Mathematics SLOs, **“Construct angles of specific measures (30, 45, 60, 75, 90, 105 and 120) and bisect angles using a compass** recorded the highest percentage” (77.81%), and **“Identify and differentiate between parallel lines, perpendicular lines and transversal”** recorded the lowest percentage (71.97 %).

Within Science, **“Identify the advantages of using renewable energy resources”** recorded the highest percentage (78.05%), and **“Explain the phenomenon of static electricity in everyday life”** recorded the lowest percentage (74.80 %).

The SLO-wise analysis provides a detailed breakdown of student performance across individual learning outcomes in English, Mathematics and Science, enabling assessment results to be examined at a more granular level alongside the overall subject-level findings.

Table 4: Summary of the SLO-wise percentage marks obtained in Month-2

Sr. No.	Subject	SLO (full description)	Percentage Obtained - Month-2
1	English	Comprehend and use simple phrasal verbs (e.g., blow up-get angry) and Idioms (e.g., lend a hand-help) in the different texts.	74.81%
2	English	Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.	78.27%
3	English	Identify poetic elements for e.g., rhythm, similes, metaphors, and sensory images in poems.	80.97%
4	English	Identify the use of some figures of speech like simile, metaphor, personification and hyperbole.	72.57%
5	English	Recognise and use the forms and functions of present perfect continuous tense.	78.73%
6	English	Understand and Identify homographs- words spelled the same, with different pronunciation.	78.07%
7	English	Use apostrophe with nouns (singular, plural) ending with missing sounds e.g., Keats' poetry, Boys' college etc.	77.00%
8	English	Use past continuous in writing and past perfect for a past action occurring before another past action (e.g., I had done my homework before my father reached home).	77.63%
9	Mathematics	Calculate the mean, median and mode for ungrouped data and solve related real-world problems.	76.67%
10	Mathematics	Calculate the surface area and volume of cube and cuboids.	74.35%
11	Mathematics	Construct angles of specific measures (30, 45, 60, 75, 90, 105 and 120) and bisect angles using a compass.	77.81%
12	Mathematics	Explain experiments, outcomes, sample space, events, equally likely events and probability of a single event. Differentiate the outcomes that are equally likely and not equally likely to occur. (including real-world word problems).	77.23%
13	Mathematics	Identify and differentiate between parallel lines, perpendicular lines and transversal.	71.97%
14	Mathematics	Identify and organize different types of data (i.e., discrete, continuous, grouped and ungrouped).	77.24%

15	Mathematics	Recognise and identify 3-D shapes (i.e., cube, cuboid, cone, cylinder, sphere, hemisphere and cone) with respect to their characteristics.	72.90%
16	Mathematics	Solve real life word problems involving perimeter and area.	75.07%
17	Mathematics	Solve real life word problems involving the surface area and volume of cubes and cuboids.	73.75%
18	Science	Compare different types of magnets (Permanent, Temporary & Electromagnetic).	76.45%
19	Science	Describe how to magnetise a magnetic material.	74.84%
20	Science	Describe the simple circuit as a path for the flow of charges.	75.20%
21	Science	Explain the phenomenon of static electricity in everyday life.	74.80%
22	Science	Grow seasonal plants and vegetables in earthen pots and demonstrate the effect of the use of fertilisers on the growth of plants.	77.48%
23	Science	Identify the advantages of using renewable energy resources.	78.05%
24	Science	Identify the use of series and parallel electric circuits in daily life.	76.97%
25	Science	Recognise that there is a space around a magnet where the effect of the magnetic force can be observed.	75.84%
26	Science	Relate potential energy and kinetic energy.	76.48%
27	Science	State the law of conservation of energy and explain how the law applies to different situations.	75.87%

5. Descriptive Analysis

The Adapted SBA model is designed to strengthen teaching practices by providing teachers with detailed, item-wise and SLO-wise information on student performance. This enables teachers to identify specific learning gaps, reflect on the effectiveness of their instruction, and provide targeted remedial support. Using assessment evidence to inform instructional decisions strengthens classroom teaching, which, over time, is expected to translate into improved student learning outcomes.

It is important to note that the monthly SBA assessments are aligned with the academic calendar, and therefore assess different SLOs each month. Consequently, improvements observed between February and March should not be interpreted as gains on the same set of SLOs. Rather, they provide an indication of whether strengthening teaching practices through the systematic use of assessment evidence is associated with improved student performance over time. Although the assessed content varies across months, enhanced instructional practices are expected to improve students' overall understanding and preparedness to learn new concepts, resulting in better performance on subsequent assessments.

Below, we examine changes in student learning outcomes across English, Mathematics, and Science using matched assessment records from February and March. Overall, the comparison indicates improvements in student performance across all three subjects during the implementation period.

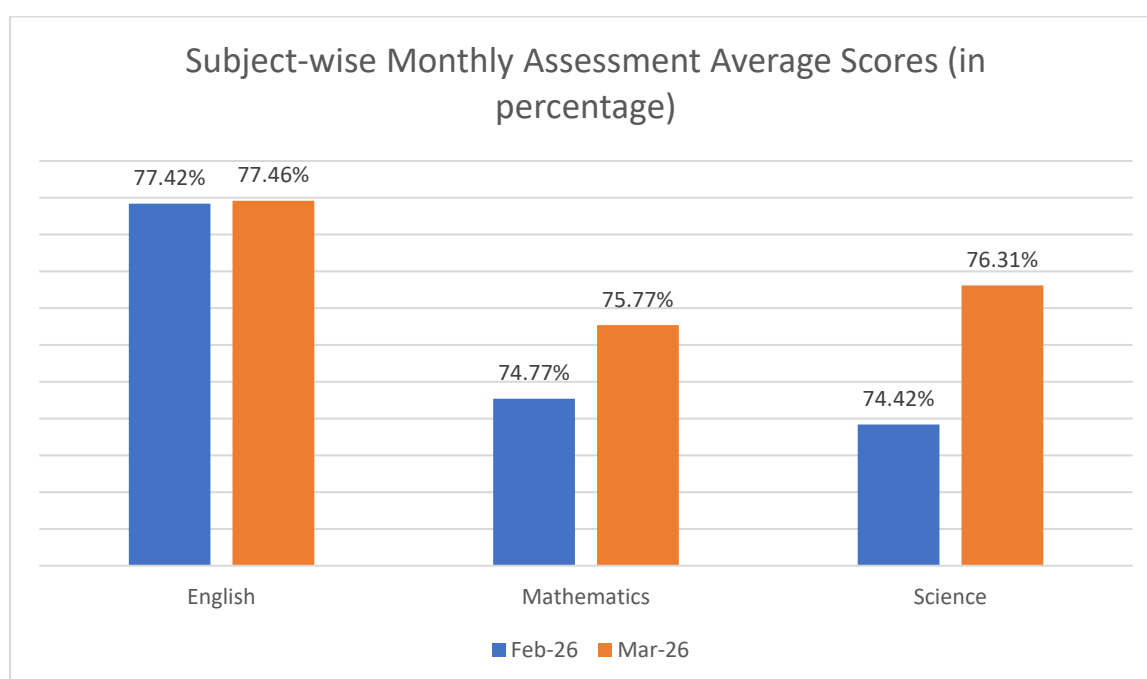


Figure 24: Average monthly % scores by subject

The findings show that:

- i. **English** scores remained largely stable, increasing marginally from 77.42 % at Month-1 to 77.46 % at Month-2.
- ii. **Mathematics** scores improved from 74.77 % at Month-1 to 75.77 % at Month-2.

- iii. **Science** recorded the largest improvement, increasing from 74.42 % at Month-1 to 76.31 % at Month-2.

Overall, Science demonstrated the greatest observed improvement between the two assessment periods, while English performance remained relatively unchanged over time.

The percentage point change across subjects further highlights the variation in observed learning gains over the two periods.

Figure 25: Percentage Points (pp) Change by Subject

The percentage point analysis indicates:

- a marginal increase of 0.05 percentage points in English,
- an increase of 0.99 percentage points in Mathematics, and
- an increase of 1.90 percentage points in science.

These findings suggest that the largest improvement in student learning outcomes was observed in science, followed by Mathematics, while English performance remained broadly consistent between the two assessment periods.

5.1 Results by Student Gender

The analysis also examined changes in learning outcomes separately for female and male students across the three assessed subjects.

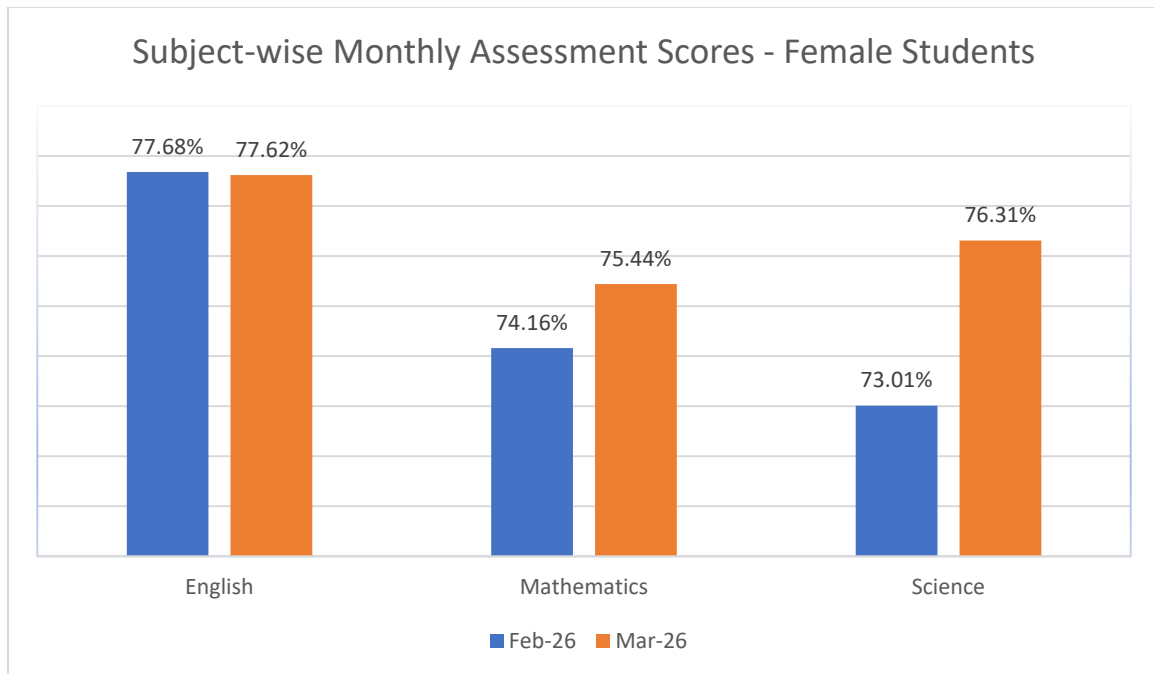


Figure 26: Average Percentage scores for female students

Among female students:

- English scores remained broadly stable, declining marginally from 77.68% to 77.62 %.
- Mathematics scores improved from 74.16 % to 75.44 %.
- Science recorded the largest improvement, increasing from 73.01 % at Month-1 to 75.64 % at Month-2.

The findings indicate that female students demonstrated notable improvements in Mathematics and Science, particularly in science, while English performance remained relatively unchanged.

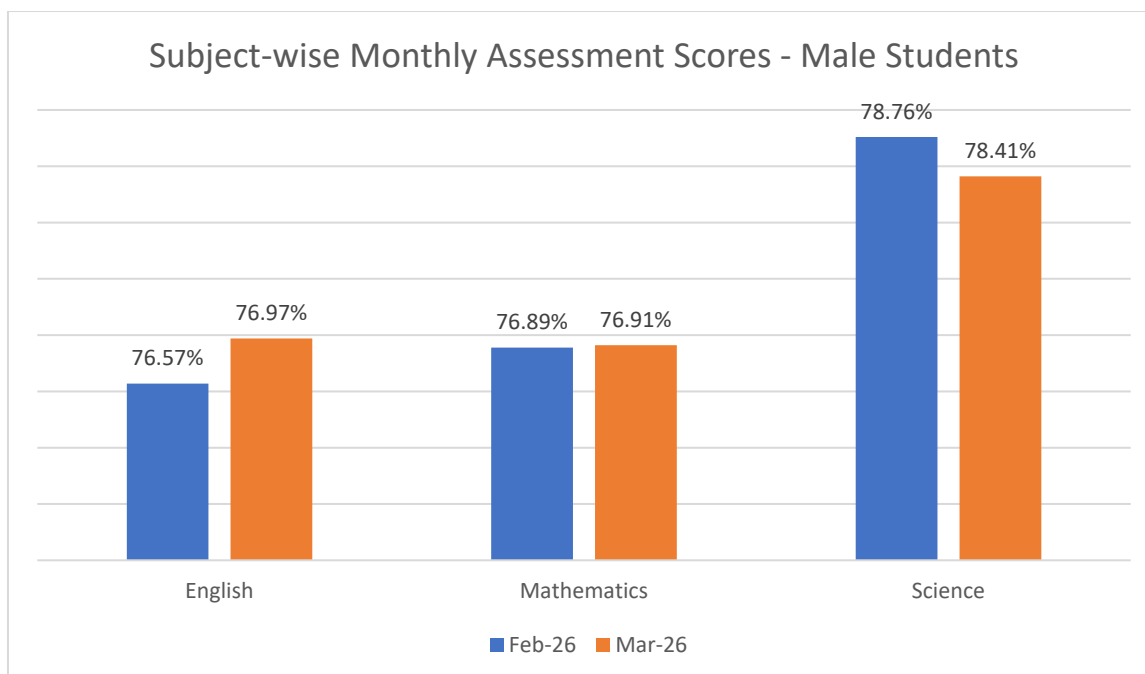


Figure 27: Average Percentage scores for male students

Among male students:

- English scores improved from 76.57 % at Month-1 to 76.97 % at Month-2.
- Mathematics scores remained largely stable, increasing marginally from 76.89 % to 76.91 %.
- Science scores declined slightly from 78.76 % to 78.41 %.

Compared with female students, male students showed relatively smaller changes across subjects between the two assessment periods. **Female students demonstrated comparatively greater improvements** in Science and Mathematics, while male students maintained relatively stable performance levels overall.

5.2 Results by District

District-wise analysis reveals variation in the patterns of Month-1 and Month-2 learning outcomes across the three pilot districts.

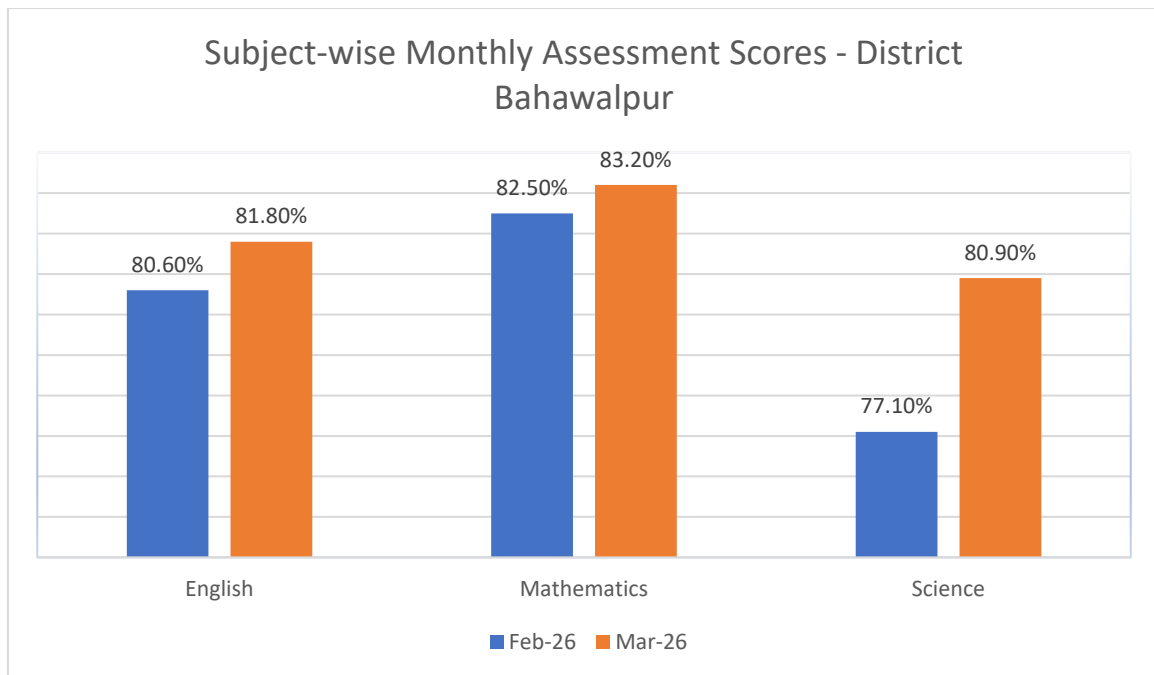


Figure 28: Percentage scores – District Bahawalpur

In Bahawalpur:

- English scores increased from 80.6 % to 81.8 %,
- Mathematics scores increased from 82.5 % to 83.2 %, and
- Science scores increased substantially from 77.1 % to 80.9 %.

The district demonstrated improvements across all three subjects, with the largest gains observed in science.

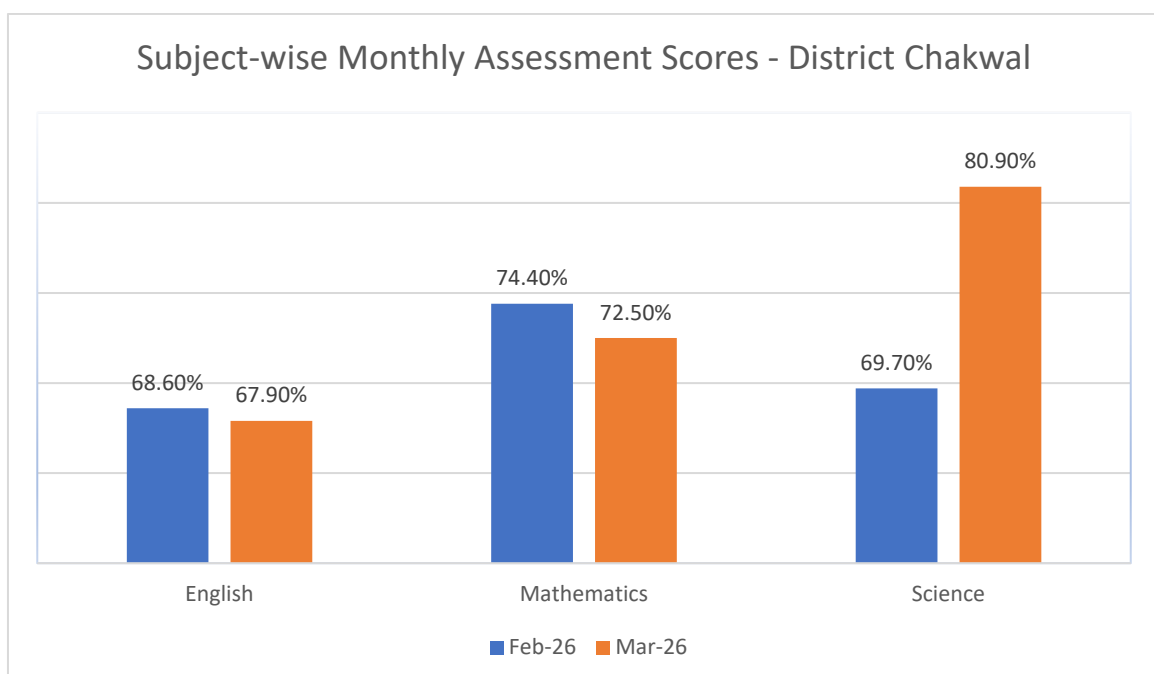


Figure 29: Percentage scores – District Chakwal

In Chakwal:

- English scores declined slightly from 68.6 % at to 67.9 %,
- Mathematics scores declined from 74.4 % to 72.5 %, while
- Science scores improved marginally from 69.7 % to 70.2 %.

Compared with the other districts, Chakwal demonstrated relatively limited improvement in learning outcomes between the two assessment periods.

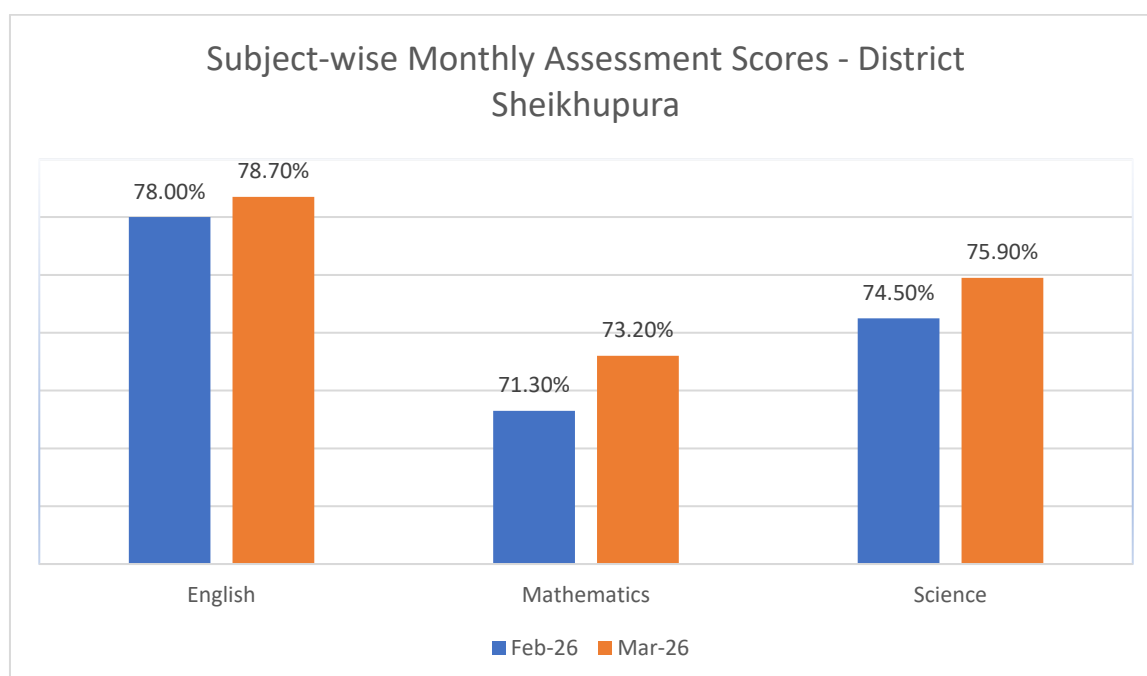


Figure 30: Percentage scores – District Sheikhupura

In Sheikhupura:

- English scores remained broadly stable, declining marginally from 78.0 % to 77.7 %,
- Mathematics scores improved from 71.3 % to 73.2 %, and
- Science scores increased from 74.5 % to 75.9 %.

The district demonstrated moderate improvements in Mathematics and Science, while English performance remained relatively consistent across the two assessment rounds.

Overall, the analysis indicates modest improvements in learning outcomes across several subjects and districts, particularly in Science and Mathematics. However, the extent of improvement varied across student groups and districts, highlighting differences in learning patterns across the participating schools.

5.3 Statistical Comparison of Assessment Results

To examine whether average student performance differed between the SBA assessment rounds in both months, paired sample t-tests were conducted separately for English, Mathematics and Science using matched student-level records. The paired t-test estimates whether the average difference in scores between the two assessment rounds is statistically different from zero. As the two assessments measured different sets of SLOs aligned with curriculum, the analysis examines changes in overall assessment performance rather than direct gains on identical learning competencies.

The analysis was conducted using matched student-level SBA records for each subject.

Mathematics

The paired t-test results for Mathematics indicate a statistically significant increase in average student performance between the two assessment rounds

Table 5: Paired t-test – Mathematics

-> subject_name = Mathematics						
Paired t test						
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
percent~e	1,950	.7576923	.0036227	.1599763	.7505874	.7647972
percent~d	1,950	.7477436	.0041503	.1832732	.7396041	.7558831
diff	1,950	.0099487	.001708	.0754225	.0065991	.0132984
mean(diff) = mean(percentage_obt~e - percentage_obt~d)				t =	5.8248	
Ho: mean(diff) = 0				degrees of freedom =	1949	
Ha: mean(diff) < 0		Ha: mean(diff) != 0		Ha: mean(diff) > 0		
Pr(T < t) = 1.0000		Pr(T > t) = 0.0000		Pr(T > t) = 0.0000		

The average Mathematics score increased from 74.77 % at Month-1 to 75.77 % at Month-2, reflecting an average increase of approximately 0.99 percentage points. The paired t-test confirms that this improvement was statistically significant ($t = 5.825$, $p < 0.001$).

These findings indicate that average Mathematics scores were significantly higher in March (month-2). However, given that different SLOs were assessed in each round, this difference should be interpreted as a change in overall assessment performance rather than direct evidence of learning gains on the same competencies.

English

The paired t-test results for English indicate that the observed change in student performance between Month-1 and Month-2 assessments was statistically insignificant.

Table 6: Paired t-test – English

-> subject_name = English						
Paired t test						
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
percen~e	1,964	.7746436	.0035851	.1588808	.7676126	.7816746
percen~d	1,964	.7741853	.0039856	.1766289	.7663689	.7820017
diff	1,964	.0004582	.0016053	.0711401	-.0026899	.0036064
mean(diff) = mean(percentage_obt~e - percentage_obt~d)				t =	0.2855	
Ho: mean(diff) = 0				degrees of freedom =	1963	
Ha: mean(diff) < 0		Ha: mean(diff) != 0		Ha: mean(diff) > 0		
Pr(T < t) = 0.6123		Pr(T > t) = 0.7753		Pr(T > t) = 0.3877		

The average English score increased marginally from 77.42 % at Month-1 to 77.46 % at Month-2, representing an average increase of only 0.05 percentage points. However, the estimated difference was not statistically significant at conventional significance levels ($t = 0.286$, $p = 0.775$).

These findings indicate that average English performance remained broadly stable across the two assessment rounds, with no statistically significant difference in scores observed.

Science

Among the three assessed subjects, Science recorded the largest and most statistically significant improvement between Month-1 and Month-2 assessments.

Table 7: Paired t-test – Science

-> subject_name = Science						
Paired t test						
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
percen~e	1,814	.7631477	.0036597	.1558722	.75597	.7703255
percen~d	1,814	.7441566	.0043654	.1859266	.7355948	.7527183
diff	1,814	.0189912	.0017867	.0760956	.0154871	.0224953
mean(diff) = mean(percentage_obt~e - percentage_obt~d)				t =	10.6295	
Ho: mean(diff) = 0				degrees of freedom =	1813	
Ha: mean(diff) < 0		Ha: mean(diff) != 0		Ha: mean(diff) > 0		
Pr(T < t) = 1.0000		Pr(T > t) = 0.0000		Pr(T > t) = 0.0000		

The average Science score increased from 74.42 % at Month-1 to 76.31 % at Month-2, representing an average increase of approximately 1.90 percentage points. The paired t-test results indicate that this improvement was statistically significant ($t = 10.630$, $p < 0.001$).

The findings indicate that average Science scores were significantly higher in Month-2 than in Month-1. As different SLOs were assessed across the two assessment rounds, the observed difference should be interpreted as an improvement in overall assessment performance rather than direct evidence of learning gains on identical competencies. The paired analysis identified statistically significant differences in mean scores between the two assessment rounds in Math and Science, while English performance remained statistically unchanged. However, because the two rounds assessed different sets of SLOs, these differences should not be interpreted as direct measures of individual student learning gains on the same competencies. Rather, the findings indicate changes in overall student performance across successive assessment rounds. These findings are broadly consistent with the descriptive analysis presented in the preceding section.

6. Limitations of the Pilot

The pilot generated valuable evidence on the feasibility and potential benefits of the adapted SBA model. However, several limitations should be considered when interpreting the findings and planning future scale-up.

First, the pilot was implemented in 100 schools across three districts, with complete data available from 87 schools. While the participating schools represented diverse geographical contexts, the findings may not fully reflect the conditions and implementation challenges across all districts of Punjab. Further testing in a larger and more diverse sample of schools would strengthen the generalisability of the findings.

Second, the evaluation covered two assessment cycles conducted over a relatively short implementation period. Although improvements in student performance were observed between the two assessment rounds, the pilot was not designed to measure longer-term learning outcomes or the sustainability of improvements in teaching and learning practices. Longitudinal monitoring over multiple assessment cycles would provide a stronger understanding of the intervention's long-term impact.

Third, the assessments administered during the two cycles measured different Student Learning Outcomes (SLOs) aligned with the curriculum progression. Consequently, while comparisons of overall performance provide useful indications of changes in student achievement across successive assessments, they should not be interpreted as direct measures of learning gains on identical competencies. Future evaluations may benefit from incorporating a set of common anchor items or comparable assessment measures to strengthen longitudinal analysis.

Fourth, although the adapted SBA model was designed to support teachers in using assessment data to inform classroom instruction and targeted remediation, the pilot primarily focused on establishing the functionality of the assessment platform and the quality of diagnostic reporting. The evaluation did not systematically measure the extent to which teachers accessed, interpreted, and utilised the diagnostic reports to modify instructional practices. Collecting evidence on teacher engagement and classroom implementation would provide a more comprehensive understanding of how assessment data translates into improved learning outcomes.

Finally, the pilot focused primarily on assessing the technical and operational feasibility of the adapted SBA model. It did not include a detailed analysis of implementation costs, cost-effectiveness, or resource requirements for provincial scale-up. These considerations will be important for informing future policy decisions regarding institutionalisation and expansion of the model across Punjab.

7. Conclusion

This pilot represents an important step in strengthening Punjab's SBA system from a mechanism primarily designed to measure learning outcomes into one that actively supports improvements in teaching and learning. By introducing item-level and SLO-level assessment data, the adapted SBA model enables teachers, school leaders and education managers to identify specific learning gaps more precisely and respond with targeted instructional support.

The adapted SBA pilot demonstrates the potential of assessment to serve not only as a mechanism for measuring student achievement but also as a tool for improving teaching and learning. The intervention enabled teachers to identify specific learning gaps, adapt their instructional practices, and provide targeted support to students based on the SLO-wise performance data captured by the system. This shifted the role of assessment from a largely summative reporting exercise to a more formative process that informs day-to-day classroom instruction and teacher decision-making. The detailed learning analytics helped teachers better understand students' strengths and weaknesses, allowing them to plan remedial instruction more effectively and monitor progress at the classroom level.

The observed improvements in student learning outcomes suggest that the systematic use of assessment evidence to inform teaching practices can contribute to better student learning over time. Beyond classroom practice, the pilot demonstrates the value of integrating assessment data into broader teacher professional development and academic support systems. SLO-level evidence can inform teacher mentoring, coaching, and continuous professional development by identifying common instructional challenges and enabling more targeted capacity-building interventions. The adapted digital platform also provides education managers with timely information to monitor learning trends and support evidence-based decision-making at school, district, and provincial levels.

As Punjab continues its broader education reform agenda, strengthening the quality and use of assessment data will remain essential for improving learning outcomes. The adapted SBA model provides a practical pathway for achieving this objective by enabling more timely, granular and actionable evidence for teachers, school leaders and policymakers alike. With continued refinement, institutional support and phased expansion, the model has the potential to become an integral component of a more responsive, evidence-driven and learner-centred education system across the province.

8. Recommendations

Based on the findings from the pilot implementation and analysis of the results, the following recommendations are proposed to strengthen the effectiveness, sustainability, and future scale-up of the adapted School-Based Assessment system in Punjab.

8.1 Immediate Priorities (Next 12 Months)

Implement a Phased Provincial Scale-Up of the Enhanced SBA Model

Building on the pilot findings, SED and PECTAA should implement a phased expansion of the Adapted SBA model across additional districts and grade levels. Expansion should begin with consolidation in the pilot districts, followed by gradual provincial rollout based on predefined readiness criteria, including teacher preparedness, platform functionality, infrastructure availability, and data quality.

Institutionalise Monthly SBA within the Academic Calendar

SED and PECTAA should institutionalise the enhanced SBA model by issuing a provincial implementation calendar before the start of the next academic year. The calendar should specify monthly assessment schedules, data upload timelines, reporting responsibilities, and review mechanisms for schools, districts, and the province to ensure consistent implementation across all participating schools.

Strengthen Teachers' Capacity to Use Assessment Evidence for Instructional Improvement

PECTAA should design and deliver SBA-related teacher training to focus not only on platform use and data entry but also on interpreting SLO-level results and using assessment evidence to inform lesson planning, differentiated instruction, and remedial support. Refresher training and school-based mentoring sessions should be conducted within the first term following implementation to reinforce these practices.

Introduce Structured Remedial Support Based on SBA Findings

PECTAA should develop and disseminate a standard package of remedial teaching resources, including lesson plans and worksheets, aligned with the lowest-performing SLOs identified through monthly SBA. Schools should be encouraged to implement these remedial activities following each assessment cycle.

8.2 Medium-Term Priorities (1–3 Years)

Strengthen Data Quality Assurance

PECTAA and district education offices should establish standard quality assurance procedures to improve the completeness and accuracy of SBA data. These should include mandatory submission timelines, automated validation checks within the platform, and district-level verification against school enrolment records to minimise missing or unmatched student records.

Establish Continuous Technical and Academic Support Mechanisms

PECTAA should designate district-level SBA focal persons to provide ongoing technical assistance, troubleshoot platform-related issues, support schools in data management, and guide teachers in interpreting assessment findings and planning instructional responses.

Integrate SBA Evidence into Teacher Professional Development

Assessment findings should be systematically used to identify common instructional challenges and inform the design of teacher professional development programmes. PECTAA should integrate SBA evidence into teacher mentoring, coaching, and continuous professional development initiatives so that training priorities are directly linked to classroom learning needs.

8.3 Long-Term System Strengthening (3–5 Years)

Institutionalise Evidence-Based Teaching and Learning

The Improved SBA model should be embedded within Punjab's broader teaching and learning strategy by integrating SLO-level assessment data into academic supervision, teacher appraisal, mentoring, and professional development systems. This will ensure that classroom assessment routinely informs instructional improvement and teacher support rather than serving solely as a reporting mechanism.

Evaluate Long-Term Impact and Cost-Effectiveness

SED and PECTAA should commission periodic evaluations to assess the long-term impact of the Improved SBA model on teaching practices and student learning outcomes. Future studies should also examine implementation fidelity, sustainability, and cost-effectiveness to inform policy decisions on province-wide institutionalisation and future investment.

