BHCIP ENDLINE REPORT | GRADE 4 & 8









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Message of the CEO, BAEC

I am pleased to announce the successful completion of the endline assessment data analysis report for grades 4 and 8, covering the subjects of Science, Mathematics, English, and Urdu. This assessment, conducted under the framework of the Balochistan Human Capital Investment Project (BHCIP), revisited the same focused districts—Quetta, Pishin, Killa Abdullah, Chaman, and Chaghi—to evaluate the impact of the project's interventions on student learning outcomes.

The endline assessment holds great significance as it measures the progress made since the baseline, providing a clear picture of the advancements achieved and the challenges that remain. By comparing student performance over time, we gain valuable insights into the effectiveness of targeted interventions such as teacher training and resource enhancements, enabling evidence-based decisions for future educational strategies.

Our primary goal with this assessment was to assess improvements in student learning and to identify persistent gaps requiring continued attention. The results demonstrate areas of notable progress as well as domains needing further focus, underscoring the importance of sustained efforts to uplift education quality in Balochistan.

I extend my sincere gratitude to all those who contributed to the success of this comprehensive assessment. The dedicated enumerators who ensured the smooth administration of the tests, the enthusiastic participation of students, and the tireless efforts of the assessment and data analysis team were instrumental in producing reliable and actionable findings.

Moving forward, it is essential that stakeholders leverage these findings to refine educational policies, optimize instructional practices, and reinforce support mechanisms. Our collective commitment to addressing the identified challenges will help create an enabling environment where every student in Balochistan can thrive academically and realize their full potential.

I commend the continued dedication of everyone involved in this journey toward educational excellence and look forward to ongoing collaboration to drive meaningful and sustainable improvements in Balochistan's education sector.

> Nizam ud Din Mengal Chief Executive Officer Balochistan Assessment and Examination Commission

Executive Summary (Grade IV)

Grade 4 students showed slight overall improvement across subjects, with the highest gains in Mathematics (+5 points) and English (+4 points), while Urdu and Science improved minimally (+1 point each).

In Science, female students outperformed males (46% vs. 37%), with more female participants. Students scored better on multiplechoice questions (50%) than constructed response questions (32%), indicating stronger recall than analytical skills. Content-wise, performance was highest in Earth Science (53%) and lowest in Physical Science (38%). Competency scores were highest in Scientific Investigation (47%), with conceptual understanding and practical reasoning slightly lower (41% and 40%). Teachers demonstrated strong science knowledge (78%), far exceeding student scores (43%), highlighting a gap in effective knowledge transfer. Item-level showed strengths in Heat and results Measurement and Food and Health, but consistent difficulties with Introduction to Sound, Force and Machine, and higher-order constructed responses. Overall, findings suggest the need to strengthen student reasoning, application skills, and physical science understanding, while improving instructional methods to bridge the teacher-student performance gap.

Grade students showed 4 modest performance in Mathematics, with female students slightly outperforming males (40% vs. 37%). The highest student achievement was in Number & Operation (43%), while Algebra saw the lowest performance (32%), reflecting challenges with abstract reasoning. In cognitive domains, students scored best in Knowing (45%), indicating stronger recall, but struggled with Applying (34%) and Reasoning (37%), highlighting weak problemand analytical skills. Teachers solving demonstrated strong subject knowledge (66%), especially in Number & Operation (65%), with relatively lower scores in Algebra (52%). The significant performance gap (27%) between teachers and students suggests a need for

improved instructional strategies. Item analysis revealed strong student performance on basic skills like identifying parallel lines (Q1: 77%) and multi-digit arithmetic (Q21: 69%). However, scores were consistently low on unit conversions, probability, and real-world problem-solving, with several items below 20%. Geometry and data interpretation also presented difficulties. Overall, the findings emphasize the need to strengthen conceptual understanding, application, and reasoning skills in Mathematics, with targeted support in abstract and real-life mathematical contexts.

Grade 4 students demonstrated moderate proficiency in English, with male students slightly outperforming females (45.36% vs. 44.43%). Students scored higher in Reading and Critical Thinking Skills (47%) than in Formal Lexical Aspects (41%), indicating better comprehension than grammar and vocabulary. Performance across cognitive domains was balanced, with scores of 46% in Understanding and 45% in Application, showing moderate abilities in both comprehension and usage. However, a significant performance gap exists between teachers (71%) and students (45%), highlighting the need for improved language instruction and support to bridge this gap.

students Female outperformed males significantly in Urdu (58% vs. 47%), with more than double the participation. Students excelled in Reading for Literary Experience (66%) and Reading for Information (56%), but scored lower in To Perform Task (50%) and Grammar and Vocabulary (44%), reflecting stronger comprehension than functional language skills. In cognitive domains, students performed well in Understanding (68%) but lagged in Application (51%). Teachers scored significantly higher (72%) than students (55%), indicating strong content mastery among teachers and the need to enhance pedagogical approaches to raise student achievement.

Executive Summary (Grade VIII)

The Grade VIII assessment reveals overall improvement across all subjects, with science showing the highest gain (+5%) and Urdu maintaining the top average score (55%).

Girls outperformed boys in science, particularly with a 6% improvement, while all science competencies and cognitive domains recorded progress, notably in applying knowledge. Despite a 5% increase in student science scores, a significant gap remains between teacher and student performance. Item-wise science results highlight strengths in practical and visual tasks, such as labeling the excretory system (79%) and interpreting SI units (73%), alongside better understanding of biotechnology and environmental topics. Conversely, students struggled with abstract concepts like unit conversion (6%), chemical reactions (12%), and space technology, indicating areas needing focused intervention. Overall, students perform better on concrete, application-based items but face challenges with theoretical and technical content, suggesting targeted support is required to address these gaps.

The assessment shows minimal improvement in Mathematics, with boys slightly outperforming girls and overall scores remaining low. Students made progress mainly in Measurement & Geometry (+9%), while Algebra showed only marginal gains and Information Handling declined sharply, signaling a critical area for intervention. Cognitive skills improved in applying and reasoning, but recall abilities decreased, reflecting a shift toward conceptual understanding that requires balancing with foundational knowledge. Teacher performance rose substantially from 42% to 60%, yet student gains were nearly stagnant, widening the performance gap. Item-level analysis reveals strengths in geometry and basic profit-loss problems, but significant weaknesses in algebraic identities, data handling, and complex problem solving. These findings underscore the urgent need for targeted strategies to enhance students' algebraic reasoning, data skills, and higher-order

thinking in mathematics.

The assessment reveals that girls consistently outperform boys in English, with both genders showing modest improvements; however, overall English proficiency remains low. Students excelled in Reading for Literary Experience but struggled notably with Reading for Information, while grammar and writing skills showed minor gains. Despite teachers scoring higher and improving slightly, the gap between teacher and student performance persists.

In Urdu, boys made significant progress, overtaking girls by the endline, who maintained steady scores. Writing skills saw a remarkable increase, whereas other competencies like reading for information and task performance declined slightly, with grammar remaining stable. Teachers showed a marked rise in Urdu proficiency, but students' modest improvements indicate the need for stronger alignment to translate teacher gains into student success.



Background

The Balochistan Human Capital Investment Project (BHCIP) is a major World Bank initiative aimed at enhancing the socio-economic conditions in Balochistan, one of Pakistan's least developed provinces. The project focuses on improving human capital by elevating the quality of education, health, and overall human development. A key objective of BHCIP is to enhance access to quality education at all levels, particularly primary and secondary education. This includes infrastructure development, provision of learning materials, and capacity building for teachers.

Following the implementation of targeted interventions such as comprehensive teacher training programs at primary and elementary levels, it is vital to evaluate the impact of these efforts. The endline assessment, conducted using the same tools as the baseline, aims to measure the changes in student learning outcomes resulting from the BHCIP interventions. This assessment was again carried out in the same five districts—Quetta, Pishin, Killa Abdullah, Chaman, and Chaghi—focusing on students in grades 4 and 8 across Science, Mathematics, English, and Urdu.

The endline assessment is a critical component in understanding the effectiveness of the BHCIP's educational initiatives. It provides evidence of progress made in student learning and highlights areas needing further support. These findings will guide the ongoing refinement and scaling of project activities to ensure sustainable improvements in educational quality and human capital development in Balochistan.

Objectives of the Endline Assessment

The primary objectives of the endline assessment are:

- To evaluate the impact of BHCIP interventions on students' learning outcomes in Science, Mathematics, English, and Urdu at grades 4 and 8.
- To identify areas where students have improved and areas where learning gaps persist, informing future program adjustments.
- To provide a comparative measure against the baseline to assess the effectiveness of teacher training and other project activities.



Role of Balochistan Assessment and Examination Commission (BAEC)

BAEC was again entrusted with the responsibility of conducting the endline assessment. Their role involved implementing the assessment using the same scientifically validated tools and methodology employed in the baseline, ensuring consistency and comparability of results over time.

Assessment Scope and Methodology

The endline assessment continued to focus on students in grades 4 and 8 in the core subjects of Science, Mathematics, English, and Urdu. The methodology replicated the baseline approach to maintain consistency:

Sample

The sampling process was conducted with the same rigor as at baseline, using Probability Proportional to Size (PPS) sampling to reflect the gender distribution of schools within the BHCIP focus areas. Stratified random sampling based on school level (primary, elementary, secondary, higher secondary) and location (urban/rural) was again applied to ensure a representative sample across key demographic variables.

While the initial plan aimed to assess 2000 students evenly split between grades 4 and 8, the actual sample sizes at endline reflected available enrollments and attendance, following the same challenges faced during the baseline.

Assessment Tools

The endline assessment employed the same NAW-developed tools used in the baseline assessment, aligned with the National Achievement Test (NAT) frameworks. These tools are rigorously designed and validated to measure student performance according to curriculum-based learning outcomes rather than textbook content alone. The tools cover content and cognitive domains specified in Tables of Specifications (ToS), ensuring that the assessment remains aligned with educational standards.

Subject and assessment experts reviewed the tools prior to endline administration to confirm their continued relevance and alignment with curricular goals.

Orientation of Enumerators

Enumerators for the endline assessment were selected from Academic Supervisors at the district level, as in the baseline. They received a refresher one-day orientation training focusing on the standardized administration procedures detailed in the Test Administrator Manual developed by NAW. This training reinforced uniformity and accuracy across all districts, maintaining the high standards of data collection established during the baseline phase.

Administration of Assessment

The endline assessment was administered over four days per grade, dedicating one day to each subject (Science, Mathematics, English, Urdu). The structured schedule minimized student fatigue and ensured thorough assessment of each subject area. Trained enumerators conducted the assessments uniformly across all sample schools, upholding consistency and reliability of data collection.

FINDINGS OF GRADE 4 (ENDLINE)

Subject Wise Mean Score of Students in Grade 4

Table 1

Subject	Baseline Mean Score	Endline Mean Score
Science	42	43
Mathematics	34	39
English	41	45
Urdu	54	55



Subject Wise Mean Score

Grade 4 students showed slight improvements in all subjects from baseline to endline. The highest gains were seen in Mathematics (5 points) and English (4 points). Urdu and Science saw minimal increases of 1 point each.



Science

Gender Wise Performance

Table 2

Gender	Number	Mean Score in %
Female	568	46
Male	271	37



Female students' outperformed than male students in Science, scoring an average of 46% compared to 37% for males. The number of female participants (568) was more than double that of males (271). This indicates both higher participation and better performance among females.

Item Wise Students' Performance in Science

Table 3

Types of Question	Mean Score in %
MCQs	50
CRQs	32



Item Wise Students' Performance

Balochistan Assessment and Examination Commission (BAEC)

Students performed significantly better in MCQs (50%) compared to CRQs (32%) in Science. This shows stronger recall and recognition skills than analytical or written expression. The gap suggests a need to strengthen students' ability to handle constructed response questions.

Content Wise Students' Performance in Science

Table 4

Content	Mean Score in %
Life Science	48
Physical Science	38
Earth Science	53



Students performed best in Earth Science with a mean score of 53%, followed by Life Science at 48%. Physical Science had the lowest performance at 38%. This suggests a need to focus more on improving understanding in Physical Science.

Competency Wise Students' Performance in Science

Table 5

Content	Mean Score in %
Conceptual Understanding	41
Practical Reasoning	40
Scientific Investigation	47



Competency Wise Students' Performance

Students scored highest in Scientific Investigation (47%), indicating relatively better skills in applying scientific methods. Conceptual Understanding (41%) and Practical Reasoning (40%)

lag slightly behind. Focused efforts are needed to strengthen core science concepts and reasoning abilities.

Comparison of Teachers and Students Performance in Science

Table 6

Category	Number	Mean Score in %
Teacher	51	78
Student	839	43



Teachers scored significantly higher (78%) than students (43%) in Science. This 35-point gap highlights a strong content understanding among teachers. However, it also suggests a disconnect in effectively transferring that knowledge to students.



Balochistan Assessment and Examination Commission (BAEC)

Item Wise Performance of Students in Science

Table 7

Q#	Types of	SLO	Mean	Q#	Types	SLO	Mean
	item		Score		of item		Score
		Heat and its				Characteristic and	46
Q1	MCQ	measurement	73	Q21	MCQ	needs of living things	
		Living things and				Food and health	55
		their					
Q2	MCQ	environment	61	Q22	MCQ		
		Heat and its				Force and machine	36
Q3	MCQ	measurement	68	Q23	MCQ		
		Living things and			-	Introduction to	31
04	MCO	their	54	024	MCO	sound	
Q4	IVICQ	Movements of	54	Q24	IVICQ	Food and health	52
05	мсо	the earth	52	025	мсо		22
43	Med	Living things and	52	Q25	Meq	Food and health	36
		their					30
Q6	MCQ	environment	61	Q26	мсq		
		Movements of				Matter and its states	27
Q7	MCQ	the earth	51	Q27	MCQ		
		Understanding				Introduction to	53
Q8	MCQ	ourselves	44	Q28	MCQ	sound	
		Matter and its				Matter and its states	54
Q9	MCQ	states	52	Q29	MCQ		
		Food and health				Introduction to	39
Q10	MCQ	1 is in a thin as and	69	Q30	MCQ	sound	22
		Living things and				Matter and its states	32
011	MCO	environment	54	021	MCO		
QII	IVICQ		54	Q31	IVICQ	Understanding	40
		electricity and				ourselves	40
Q12	мсо	magnetism	44	Q32	мсо	ourserves	
		Matter and its				Matter and its states	39
Q13	MCQ	states	64	Q33	MCQ		
		Matter and its				Food and health	52
Q14	MCQ	states	61	Q34	MCQ		
		Living things and				Matter and its states	36
		their					
Q15	MCQ	environment	48	Q35	CRQ		
Q16	MCQ	Food and health	42	Q36	CRQ	Matter and its states	31
		Food and health				Characteristic and	49
Q17	MCQ		4/	Q37	CRQ	needs of living things	20
010	MCO	Understanding	16	0.28	CRO	Understanding	20
U18	WILL	Characteristic	40	<u>U</u> 38	CKŲ	ourseives	15
	-	and needs of				sound	12
019	мсо	living things	45	039	CRO	300110	
020	MCO	Food and health	43	040	CRO	Matter and its states	21
Q19 Q20	MCQ	Food and health	45 43	Q40	CRQ	Matter and its states	21

Students performed best on questions related to Heat and its Measurement (Q1: 73%, Q3: 68%) and Food and Health (Q10: 69%). Matter and its States showed mixed performance, with some questions scoring above 60% (Q13, Q14) and others below 30% (Q27, Q31). Introduction to Sound and Force and Machine had consistently low scores, with multiple items below 40%. Constructed Response Questions (CRQs) generally had lower scores than MCQs, especially in Understanding Ourselves (Q38: 20%) and Introduction to Sound (Q39: 15%). Students showed moderate performance in Living Things and Their Environment, mostly scoring between 48%–61%. Overall, students struggled more with higher-order thinking and application-based questions, especially in CRQs.

Mathematics

Gender Wise Performance in Mathematics

Gender	Number	Mean Score in %
Female	612	40
Male	290	37

Table 8



Female students outperformed male students in Mathematics, scoring an average of 40% compared to 37%. Despite higher female participation, the performance gap, though small, favors females. This suggests slightly stronger mathematical achievement among female students.

Content Wise Students Performance in Mathematics

Table 9

Content	Mean Score in %
Number & Operation	43
Measurement & Geometry	35
Algebra	32
Information Handling	36



Students performed best in Number & Operation with a mean score of 43%. The lowest performance was in Algebra at 32%, indicating difficulty with abstract concepts. Measurement & Geometry and Information Handling also showed weak performance, scoring 35% and 36% respectively.

Cognitive Domain Wise Students' Performance in Mathematics

Table 10

Content	Mean Score in %
Knowing	45
Applying	34
Reasoning	37



Cognitive Domain Wise Students' Performance

Students scored highest in the Knowing domain (45%), indicating better recall of facts and procedures. Applying (34%) and reasoning (37%) scores were lower, showing difficulty in using knowledge in practical and analytical situations. This highlights a need to strengthen higher-order thinking skills in Mathematics.

Comparison of Teachers and Students Performance in Mathematics

Category	Number	Mean Score in %
Teacher	47	66
Student	902	39

Table 11



Teachers achieved a much higher average score (66%) in Mathematics compared to students (39%), reflecting strong subject mastery. The 27% gap highlights a difficulty in effectively conveying mathematical concepts to students. Addressing this gap is crucial for enhancing student learning outcomes.

Content Wise Teachers' Performance

Table 12

Content	Mean Score in %
Number & Operation	65
Measurement & Geometry	58
Algebra	52
Information Handling	58



Content Wise Teachers' Performance

Teachers performed best in Number & Operation with a mean score of 65%. Performance was slightly lower in Measurement & Geometry and Information Handling (both 58%). Algebra had the lowest score at 52%, indicating a relative area for improvement.

Q#	Mean	SLO/Item		Mean	SLO/Item
	Score			Score	
01	77	Recognize and identify parallel and	Q25	26	Solve real-world word problems
QI	63	Read and write time from digital and	Q26	38	Describe the radius, diameter, and
Q2		analog clocks in 12-hour and 24-hour format.			circumference of a circle.
Q3	51	Identify divisibility rules for 2, 3, 5 and 10 and use them up to 4-digit numbers	Q27	16	Reinforce/recall round off numbers to the nearest tens, hundreds, thousands.
Q4	32	Convert units of length from larger to smaller units (Kilometre, metre, centimetre and millimetre).	Q28	39	Multiply and divide a 2-digit number withone decimal place by a 1-digit number or a 2-digit number.
Q5	46	Solve real-world word problems (including multi step) involving addition and subtraction.	Q29	32	Calculate duration of different events using start time and end time.
Q6	58	Recognise the place value of each digit in 5-digit numbers.	Q30	37	Complete the given increasing and decreasing number patterns.
Q7	41	Describe the outcome of a simple probability experiment (spinner and dice), using mathematical language (i.e. impossible, less likely, more likely, equally likely, unlikely and certain).	Q31	66	"Identify and differentiate between multiples and factors and find:
Q8	17	Convert units of capacity from larger to smaller units (litre and millilitre).	Q32	44	Recognise, read, write decimal numbers and identify the place value of decimal numbers with up to three decimal places.
Q9	43	Compare two numbers up to 5 - digit numbers using symbols "<", ">", or "="	Q33	16	Convert, add and subtract mass to solve real-world word problems.
Q10	27	Draw, read and interpret horizontal and vertical single and double bar graphs (including real life problems).	Q34	26	Multiply and divide a 2-digit number with one decimal place by10 and 100.
Q11	36	Express decimal numbers up to three decimal places as fractions.	Q35	21	Recognize and identify acute, right, and obtuse angles.
Q12	31	Recognize and identify acute, right, and obtuse angles.	Q36	16	Describe the outcome of a simple probability experiment (spinner and dice), using mathematical language (i.e. impossible, less likely, more likely, equally likely, unlikely and certain).
013	35	Multiply and divide proper, improper fractions and mixed numbers by a whole number.	Q37	43	"Differentiate among:
Q14	50	Reinforce/recall round off numbers to the nearest tens, hundreds, thousands.	Q38	38	proper fractions

Item Wise Performance of Students in Mathematics

Q#	Mean	SLO/Item	Q#	Mean	SLO/Item
	Score			Score	
	41	Identify and write expressions or	Q39	34	improper fractions
		number sentences to represent		/	
Q15		problems that may involve unknowns.			
	57	"Identify and differentiate between	Q40	49	mixed numbers."
Q16		multiples and factors and find:			
	42	all factor pairs of a number	Q41	62	Apply formulas to find the
					perimeter and area of squares,
Q17					rectangles, and rectilinear shapes.
	41	common factors of two numbers"	Q42	39	Convert larger units to smaller
					units of time (hours, minutes,
010					seconds, years, months, weeks
Q18	20	Identify and differentiate between 2	042	42	and days).
	30	digit prime and composite numbers up	Q43	42	fractions
010		to 50			nactions.
	58	Add and subtract up to 5-digit numbers	044	36	Recognise the place value of each
	50	mentally and in written form (with and	Q77	50	digit in 5-digit numbers
020		without regrouping)			
	69	Add and subtract up to 5-digit numbers	Q45	37	Draw, read and interpret
		mentally and in written form (with and			horizontal and vertical single and
		without regrouping)			double bar graphs (including real
Q21					life problems).
	17	" "Differentiate among:	Q46	34	Solve real-world word problems
		proper fractions			(including multi step) involving
		improper fractions			addition and subtraction.
Q22		mixed numbers."			
	33	Multiply and divide proper, improper	Q47	67	"Identify and differentiate
033		tractions and mixed numbers by a			between multiples and factors and
Q23	20	whole number.	049		IIIIO:
	30	and vertical single and double bar	Q48	44	an factor pairs of a number
024		graphs (including real life problems)			
Q24	30	and vertical single and double bar graphs (including real life problems).	Q48	44	all factor pairs of a number

Students showed strong performance in basic skills like recognizing parallel lines (Q1: 77%) and adding/subtracting large numbers (Q21: 69%). Low scores were observed in converting units (e.g., capacity Q8: 17%, mass Q33: 16%) and probability-related questions (Q36: 16%). Multiples and factors questions were consistently well-performed (Q31: 66%, Q47: 67%). Geometry and graph interpretation items had mixed results, with some below 30% (Q10, Q24). Word problems and real-world applications saw generally low performance (e.g., Q25: 26%, Q46: 34%). Overall, students performed better on recall-based tasks and struggled with application and reasoning-based items.

English

Gender Wise Performance in English

Table 15

Gender	Number	Mean Score in % Endline
Female	590	44.43
Male	272	45.36



Male students slightly outperformed than female students in English, with a mean score of 45.36% compared to 44.43%. The performance gap is minimal, indicating similar achievement levels across genders. Despite lower participation, male students showed a marginal edge in English performance.

Content Wise Students' Performance in English

Table 16

Content	Mean Score
Reading and Critical Thinking Skills	47
Formal Lexical Aspects	41

Formal Lexical Aspects 41 Reading and Critical Thinking Skills 47 30 32 34 36 38 40 42 44 46 48

Content Wise Students' Performance

Students showed higher performance in Reading and Critical Thinking Skills, with an average score of 47%. They scored lower in Formal Lexical Aspects, at 41%, highlighting difficulties in

vocabulary and grammar. This indicates that students have stronger comprehension abilities than mastery of language mechanics.

Cognitive Domain Wise Students' Performance in English

Table 17

Level	Mean Score in %
Understanding	46
Application	45

Cognitive Domain Wise Students' Performance



Students performed similarly in both Understanding (46%) and Application (45%) domains in English. This indicates balanced skills in comprehending and using the language. However, overall scores suggest moderate proficiency with room for improvement in both areas.

Comparison of Teaches and Students Performance in English

Table	18	

Category	Mean Score in %
Teacher	71
Student	45



Comparison of Teaches and Students Performance

The data reveals a significant gap between teachers' and students' performance in English. Teachers scored much higher, with an average of 71%, while students scored 45%. This 25point difference indicates that although teachers possess strong English skills, students are facing challenges in achieving comparable proficiency.

Urdu

Gender Wise Performance in Urdu

Table 19

Gender	Number	Mean Score in %
Female	571	58
Male	271	47



Female students outperformed male students in Urdu, scoring an average of 58% compared to 47%. The number of female participants (571) was more than double that of males (271). This indicates both higher participation and stronger performance among females in Urdu.

Content Wise Students' Performance in Urdu

Table 20

Content	Mean Score in %
Reading for Literary Experience	66
Reading for Information	56
To Perform Task	50
Grammar and Vocabulary	44



Students achieved the highest scores in Reading for Literary Experience (66%) and Reading for Information (56%). Performance was lower in To Perform Task (50%) and Grammar and Vocabulary (44%). This suggests that students have stronger reading comprehension than practical language use and grammatical skills.

Cognitive Domain wise Students' Performance in Urdu

Table 21

Level	Mean Score in %
Understanding	68
Application	51





Students performed better in the Understanding domain with a mean score of 68%, compared to Application, which scored 51%. This indicates stronger abilities in grasping and interpreting content.

Comparison of Teachers and Students Performance

Table 22

Category	Mean Score in %
Teachers	72
Students	55



Teachers outperformed students significantly, with a mean score of 72% compared to students' 55%. The 17-point gap highlights stronger subject mastery among teachers. This suggests a need to enhance instructional strategies to help students reach similar proficiency levels.

FINDINGS OF GRADE VIII ASSESSMENT

Subject Wise Mean Score of students in Percentage

Table 1

Subject	Mean Score (Baseline)	Mean Score (Endline)
Science	38	43
Mathematics	32	33
English	31	34
Urdu	51	55



The assessment shows an overall improvement in all subjects from baseline to endline. Science showed the highest gain (+5%), while Urdu had the highest overall scores (55%). Mathematics showed the smallest improvement, increasing only by 1%.

Students' Performance in Science Subject

Gender Wise Performance

Table 2



Girls outperformed boys in science at both baseline and endline stages. Girls showed a greater improvement (+6%) compared to boys (+4%). At endline, girls scored 45%, while boys lagged behind at 40%.

Student Performance in Each Competency of Science

Table 3

Content	Mean Score (Baseline)	Mean Score (Endline)
Life Science	42	49
Physical Science	37	41
Earth Science	34	40





All Science competencies showed improvement from baseline to endline. Life Science had the highest scores at both stages, rising from 42% to 49%. Earth Science showed the greatest improvement (+6%), despite having the lowest starting score.

Cognitive Domain Wise Students' Performance in Science

	Level	Mean Score in % Baseline	Mean Score in % Endline
Knowing		40	44
Applying		36	42
Reasoning		41	45



Cognitive Domain Wise Students' Performance

Students improved across all cognitive domains in science from baseline to endline. The "Applying" domain showed the highest improvement (+6%). "Reasoning" had the highest overall scores, reaching 45% at endline.

Comparison of Teacher and Student Performance in Science

Table 5

Table 4

Category	Mean Score in % Baseline	Mean Score in % Endline
Teacher	60	61
Student	38	43



Students demonstrated a notable progress in science, with a 5% increase in their mean score. Teachers' scores remained relatively stable, showing only a slight 1% rise. Despite improvements, a significant performance gap between teachers and students persists.

Item Wise Performance of Students in Science

Table 6

Q#	Mean	SLO	Q#	Mean	SLO
	Score			Score	
		Identify the characteristics that can			Differentiate between mitosis
		be transferred from parents to off			and meiosis
Q1	68	springs.	Q27	61	
		Explain that how do astronauts			Describe basic component of
Q2	53	survive and research in space	Q28	16	an electronic system
		Interconvert smaller units and			Explain the types of chemical
Q3	6	bigger units	Q29	21	reactions with examples
		Draw and label human excretory			Explain the Greenhouse effect
Q4	79	system	Q30	57	
		Interconvert smaller units and			Design a spacecraft and explain
		bigger units			the key features of design to
~-					show its suitability as a
Q5	49		Q31	64	spacecraft
		Describe development of tools and			Describe basic component of
00	11	technologies used in space	022	25	an electronic system
Q6	11	exploration	Q32	25	Llas indicators to identify paids
		Investigate the means used by			Use indicators to identify acids,
		sciencist and engineers to			alkalis and neutral substances
		overcome the problems of			
07	64	expansion and contraction in	033	<i>1</i> 1	
<u></u>	04	Describe the role of kidney in	Q33	41	Explain that how do astronauts
08	47	excretion of waste	034	24	survive and research in space
00		Explain the balancing of a chemical	Q34	27	Describe the uses of expansion
09	12	reaction	035	46	and contraction of liquids
	12	Describe the image formation using	433	10	Explain the working of the
010	61	a lens by ray diagram	036	49	model generator
~		Identify new technologies used on	200		Identify the characteristics that
		earth that have developed as a			can be transferred from
		result of the development of space			parents to off springs.
Q11	16	technology	Q37	40	
		Interpret SI units in the daily life			Explain the uses of acid, alkali
Q12	73		Q38	32	and salt in daily life
		Describe the causes and effects of			Suggest techniques to cure
Q13	56	ozone depletion	Q39	9	problems of kidneys
		Describe the term atmospheric			Identify the technological tools
Q14	73	pressure	Q40	41	used in space exploration
		List some biotechnological			Identify the simple devices that
Q15	61	products used in daily life.	Q41	43	generate electricity in daily life
		Select and use measuring			Define the term Pressure
Q16	55	instruments	Q42	26	
	-	Define the terms acid, alkali and		N	Identify DNA and chromosomes
Q17	39	salt	Q43	52	in the cell diagram
		Define the term Pressure			Define chemical reactions and
Q18	49		Q44	40	give examples

Q#	Mean	SLO	Q#	Mean	SLO
	Score	List some biotechnological		Score	Define chemical reactions and
Q19	63	products used in daily life.	Q45	62	give examples
		Carry out a research to explain			Differentiate between mitoses
		global warming and its likely effects			and meiosis
Q20	37	on life on earth.	Q46	31	
		Describe the term atmospheric			Explain the sources, properties
		pressure			and harmful effects of air
Q21	25		Q47	51	pollutants
		Explain the types of chemical			Differentiate between
		reactions with examples			voluntary and involuntary
Q22	33		Q48	49	actions they have experienced
		Suggest the ways to solve the			Explain the energy changes in
		problems that have resulted from			chemical reactions
Q23	52	space exploration	Q49	25	
		Describe the structure and			List general applications of
Q24	42	functions of the nervous system	Q50	61	biotechnology in various fields.
		Explain that how do astronauts			Describe the image formation
Q25	47	survive and research in space	Q51	17	using a lens by ray diagram
		Compare and contrast the working			
		of a human eye with the lens			
Q26	44	camera			

The item-wise performance data in science reveals considerable variation across different Student Learning Outcomes (SLOs). Students performed best on practical and visual-based tasks, such as drawing and labeling the human excretory system (Q4 – 79%) and interpreting SI units (Q12 – 73%). Concepts related to biotechnology and environmental science also saw relatively high scores, e.g., atmospheric pressure (Q14 – 73%) and biotechnological products (Q19 – 63%).

On the other hand, students struggled significantly with numerical and abstract topics like unit conversion (Q3 - 6%) and balancing chemical reactions (Q9 - 12%). Space-related technology questions (Q6, Q11, Q34) consistently received low scores, indicating a need for better conceptual understanding in this area. Certain questions assessing understanding of electronic systems (Q28, Q32) and kidney-related functions (Q39) also reflected poor comprehension.

Moderate performance was observed in questions involving acids, alkalis, and basic chemistry concepts, showing potential for improvement. There appears to be a general trend: students excel more in questions linked to visuals, labeling, or everyday applications, and struggle with abstract theoretical content. Overall, the data highlights key strengths in basic biological and environmental knowledge, while pointing out gaps in applied physics, chemistry, and technology-related competencies.

Mathematics

Gender Wise Performance in Math

Table 7

Gender	Mean Score in % Baseline	Mean Score in % Endline
Male	34	35
Female	31	32

Gender Wise Performance



Both boys and girls showed only a slight improvement in Mathematics from baseline to endline. Male students maintained a marginal lead over females throughout the assessment. Overall performance in Math remained low, indicating a need for targeted interventions across genders.

Student Performance in Each Competency of Math

Content	Mean Score in % Baseline	Mean Score in % Endline
Number & Operation	35	40
Measurement & Geometry	32	41
Algebra	26	28
Information Handling	39	42





Students showed improvement in most Math competencies, especially in Measurement & Geometry (+9%). Algebra remained weak with only a slight gain, while in Information Handling increased from 39% to 42%. In all areas of mathematics showed improvement, suggesting overall positive progress from baseline to endline.

Cognitive Domain Wise Student Performance in Math

Table 9

Level	Mean Score in % Baseline	Mean Score in % Endline
Knowing	36	30
Applying	30	36
Reasoning	32	34



Students made progress in higher-order thinking, with gains in both Applying and Reasoning domains. Interestingly, performance in the Knowing domain declined from 36% to 30%, suggesting a dip in recall-based skills. This shift highlights a growing focus on conceptual understanding but also signals the need to reinforce foundational knowledge.

Comparison of Teacher and Student Performance in Math

Table 10

Category	Mean Score in % Baseline	Mean Score in % Endline
Teacher	42	60
Student	32	33

Comparison of Teacher and Student Performance



Teachers showed a significant improvement in Math, jumping from 42% to 60%. Student performance, however, remained almost stagnant with just a 1% increase. The widening gap suggests that while teacher capacity is growing, it hasn't yet translated into student learning gains.

Item Wise Performance of Students in Math Table 11

Q#	Mean	SLO/Item	Q#	Mean	SLO/Item
	Score			Score	
		Calculate unknown angle of			Solve real world word problem to
Q1	79	geometrical shape	Q24	29	determine the width of rectangle
					State the Pythagoras theorem and
		Solve real world word problems			use it to solve right angled
Q2	75	involving profit %, loss %,	Q25	31	triangles.
		Solve real world word problems			
		involving profit %, loss %, discount,			
		profit, markup, insurance, partnership			
Q3	53	and inheritance.	Q26	25	Determine the volume of sphere
		Convert Pakistani currency to well-			
	CF	known international currencies and		27	Solve real world word problems
Q4	65	vice versa.	Q27	27	involving profit %, loss %,
					Solve simultaneous linear
					equations in two variables using:
					substitution method
					division and factorization
05	38	Determine intersection of set	028	34	method"
45		Solve real world word problems	Q20		
		involving profit %, loss %, discount.			Recognise the algebraic identities
		profit, markup, insurance, partnership			and use formula and to expand
Q6	42	and inheritance.	Q29	15	expressions:
					Use of Pythagoras Theorem, to
Q7	8	Calculate class interval of the data	Q30	18	determine length
		Round off numbers up to 5 significant			Determine the angle of diagonal
Q8	23	figures.	Q31	17	of a square
		Differentiate between recurring and			Determine the unknown angle in
Q9	28	terminating and rational number	Q32	17	quadrilateral shape
					Construct different types of
					quadrilaterals (square, rectangle,
010	40	Differentiate between rational and	0.00	0	parallelogram, trapezium,
Q10	43	irrational numbers.	Q33	9	rhombus and kite).
		Describe operations on sets and verify			
		laws with respect to union and			Multiplication of Algebraic
011	25	intersection	034	23	
QII	25	Describe sets using language (tabular	Q34	25	
		descriptive and set- builder notation)			Recall the multiplication of
012	62	and Venn diagrams	035	42	polynomials.
					Solve real world word problems
		Describe operations on sets and verify			involving profit %, loss %,
		commutative, associative, distributive			discount, profit, markup,
		laws with respect to union and			insurance, partnership and
Q13	36	intersection.	Q36	21	inheritance.

Q#	Mean	SLO/Item	Q#	Mean	SLO/Item
	Score			Score	
		Solve simultaneous linear equations in		_/ _	
		two variables using:		1	
		elimination method		1	
		substitution method			Solve the polynomials through
Q14	28	division and factorization method"	Q37	31	division process
					Solve real life problems involving
Q15	41	Determine Frequency	Q38	21	number sequences and patterns.
					State the Pythagoras theorem and
					use it to solve right angled
Q16	54	Determine the lengths of triangle	Q39	13	triangles.
					Perform probability experiments
					(for example tossing a coin, rolling
					a die, spinning a spinner etc. for
					certain number of times) to
	24	Calculate the square root to one			estimate probability of a simple
Q17	31	decimal	Q40	40	event
					Construct frequency distribution
					tables, histograms (of equal
		Simplify algebraic expressions			widths) and frequency polygons
010	22	involving addition, subtraction,	0.41	24	and solve related real-world
Q18	25	multiplication and division.	Q41	54	problems.
		Decall the addition and subtraction of			Simplify algebraic expressions
010	36		042	36	multiplication and division
QIS	50	porynomials.	Q4Z	50	Solve real world word problems
					involving profit % loss %
					discount profit markun
				■ Ei	insurance partnership and
020	30	Determine number pattern	043	19	inheritance.
~			- Q.10		Simplify algebraic expressions
		Solve real life problems involving			involving addition, subtraction.
Q21	28	number sequences and patterns.	Q44	24	multiplication and division.
		Represent real numbers on a number			When (x, y) is rotated 900 about
		line and Recognize the absolute value			the origin in clockwise direction.
Q22	27	of a real number.	Q45	28	The new co-ordinates are:
		Solve rounded off to two decimal			
Q23	38	places			

The item-wise performance in Mathematics reveals a wide range of student achievement across different topics. Students excelled in geometry-related questions, such as calculating unknown angles (Q1 - 79%) and solving real-world profit and loss problems (Q2 - 75%).

Conversely, questions on algebraic identities (Q29 – 15%) and constructing quadrilaterals (Q33 – 9%) had notably low scores, indicating weak conceptual understanding. Data handling skills, including calculating class intervals (Q7 – 8%) and rounding numbers (Q8 – 23%), were among the poorest areas for learners.

Moderate performance was observed in operations on sets and solving simultaneous equations, with scores ranging mostly in the 20-40% bracket. Students showed some ability in applying the Pythagoras theorem (Q25 – 31%) but struggled with related angle and length calculations (Q30, Q31 – below 20%). Real-world application problems had mixed results, with

success in simpler profit-loss scenarios but difficulties in more complex algebraic problem-

Overall, the data suggests students are stronger in practical and arithmetic skills but face challenges with abstract algebra, data interpretation, and higher-order problem solving. This highlights a need for focused teaching strategies to strengthen algebraic concepts, data handling, and critical thinking in mathematics.

English

Gender Wise Performance in English

Table 12

Gender	Mean Score in % Baseline	Mean Score in % Endline
Boys	29	31.45
Girls	31	34.35



Girls consistently outperformed boys in English, with both showing modest improvements by endline. Girls' scores increased by about 3.35%, while boys improved by roughly 2.45%. Despite these gains, overall English proficiency remains low, indicating a need for enhanced language support.

Student Performance by content wise in English

Table 13

Content	Mean Score in % Baseline	Mean Score in % Endline
Reading for Literary Experience	21	40
Reading for Information	36	21
Grammar and Vocabulary	39	38
Writing	30	36

Student Performance by content wise



Students showed remarkable progress in Reading for Literary Experience, nearly doubling their scores. However, performance in Reading for Information declined significantly, dropping from 36% to 21%. Grammar, Vocabulary, and Writing skills remained relatively stable, with slight improvement seen only in Writing.

Comparison of Teachers and Students Performance in English

Table 14

Category	Mean Score in % Baseline	Mean Score in % Endline
Teacher	42	44
Student	31	34



Comparison of Teachers and Students Performance

Teachers consistently scored higher than students, showing a modest increase from 42% to 44%. Students improved slightly, moving from 31% to 34%, but the gap between teachers and learners remains noticeable. This suggests that enhanced teacher support has yet to fully translate into substantial student gains.

Urdu

Gender Wise Performance in Urdu

Table 15



Boys showed a significant improvement in Urdu, rising from 47% to 55%, surpassing girls by endline. Girls' scores remained fairly steady, with a slight dip from 53% to 54%. This shift indicates boys closing the performance gap and achieving parity in Urdu proficiency.

Student Performance by content wise in Urdu

Table 16

Content	Mean Score in % Baseline	Mean Score in %Endline
Reading for Literary Experience	59	63
Reading for Information	50	46
To Perform Task	48	47
Grammar and Vocabulary	50	50
Writing	42	60



Students made notable strides in Writing, with scores jumping from 42% to 60%. Slight improvements were also seen in Reading for Literary Experience, while Reading for Information and Task Performance experienced minor declines. Grammar and Vocabulary skills remained unchanged, indicating steady but limited growth in that area.

Comparison of Teachers and Students Performance in Urdu

Table 17

Category	Mean Score in % Baseline	Mean Score in % Endline
Teachers	68	83
Students	51	55



Comparison of Teachers and Students Performance

Teachers demonstrated a substantial improvement in Urdu, increasing their scores from 68% to 83%. Students showed a modest gain, rising from 51% to 55%, yet still lag behind teachers significantly. This growing disparity suggests that improved teacher performance has not yet fully impacted student learning outcomes.



RECOMMENDATIONS

Sustain and Scale Effective Project Interventions

- Institutionalize successful teaching and learning practices introduced during the project, such as structured lesson planning, formative assessments, and active learning.
- Scale up interventions to additional districts and schools, focusing on those with the lowest performance or minimal gains.

Address Persistent Learning Gaps Through Targeted Support

- Despite overall gains, student performance remains low in complex and abstract areas like Algebra, Physical Science, and Grammar. Introduce focused remedial programs and summer learning camps for struggling learners.
- Tailor support programs by subject and grade level, using diagnostic data to differentiate instruction.

Subject-Specific Interventions

- Mathematics: Introduce remedial programs focusing on Algebra, unit conversions, and data handling; use visual aids and manipulatives to teach abstract concepts.
- Science: Prioritize improvement in Physical Science and abstract topics like unit conversions and chemical reactions through hands-on experiments and models.
- English and Urdu: Enhance vocabulary, grammar, and writing through structured language labs and interactive reading and writing tasks.

Bridge the Teacher-Student Performance Gap

- Although teachers demonstrated strong subject mastery, the large performance gap with students suggests the need for improved pedagogical skills and student engagement strategies.
- Expand professional development to include practical classroom management, differentiated instruction, and use of formative feedback.

Strengthen Higher-Order Thinking and Application Skills

- Students performed better on recall tasks but struggled with application and reasoning. Integrate project-based learning, scientific inquiry, and mathematical modeling into the curriculum to build critical thinking.
- Encourage the use of open-ended questions and real-life tasks in everyday teaching.

Promote Gender Equity and Support

- Leverage the stronger performance of girls in subjects like Urdu and Science by creating girl-led peer tutoring groups.
- Provide targeted motivational and academic support for boys in areas where they are underperforming, especially reading and grammar.

Improve Language Instruction Across Subjects

• Given challenges in grammar, vocabulary, and comprehension in both English and Urdu, introduce cross-curricular language support, integrating language development into Math, Science, and Social Studies.

Enhance Assessment Literacy and Classroom Assessment

- Train teachers to design and use assessments that measure both knowledge and skills, including application and reasoning.
- Continue monitoring learning through short-cycle assessments and use data to inform instructional planning.

Provide Adequate Teaching and Learning Resources

- Ensure continuity of resource support (e.g., teaching aids, manipulatives, science kits, and storybooks) that were part of the project.
- Equip schools with digital and print materials aligned with the curriculum and learner needs.

Institutionalize Monitoring and Evaluation Systems

- Develop a province-wide academic performance dashboard to track progress across subjects, grades, and schools.
- Conduct periodic assessments to ensure gains are maintained and to inform adaptive learning strategies.

Policy-Level Support for Systemic Change

- Use endline findings to inform evidence-based policymaking, particularly in curriculum enhancement, teacher training, and learning equity.
- Prioritize investment in teacher capacity-building and school leadership to institutionalize gains made during the project.

GALLERY















Balochistan Assessment and Examination Commission (BAEC)







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