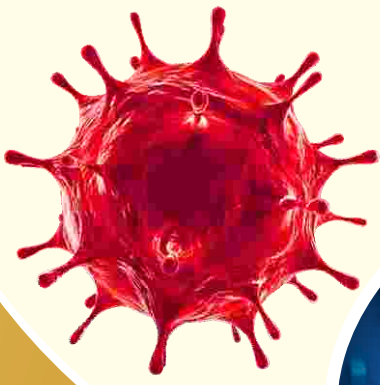




Assessment of Students' Learning Loss (COVID-19) Punjab



Punjab Examination Commission (PEC)

www.pec.edu.pk



Small Scale Diagnostic Study
Assessment of Students' Learning Loss (COVID-19) Punjab

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Prepared by : Research & Analysis Wing Punjab Examination Commission (PEC), Lahore

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EXECUTIVE SUMMARY

We have gone through an unprecedented time. The COVID-19 pandemic caused inordinate disruption of education systems. Nearly 1.7 billion learners (about 94 per cent of the world's student population) across all countries and continents effected from the closures (United Nations, 2020). Impromptu closure of schools caused students' learning loss that, also threaten to extend beyond this generation due to the pandemic's economic impact alone. Pakistani students are also facing learning losses due to the closure of the schools. There is need to cope with students learning losses and adapt such measures that reduce the learning losses and fill achievement gaps among different groups of the students of same grades.

Punjab Examination Commission (PEC) has taken step to estimate the learning loss of students due to the pandemic. Since such situation has never seen before so, it was a colossal task for PEC to estimate learning loss to formulate effective and actionable recommendations for all stakeholders especially teachers training institutions and curriculum developers to train teachers and align curriculum as per need of affected learners to reduce their learning loss within this academic year. This small scale study was carried out in six districts—Bahawalnagar, Gujrat, Hafizabad, Khanewal, Layyah and Lodhran where School Based Assessment (SBA) of grade 5 was completed in March 2020. Taking the results of SBA as reference point, PEC conducted assessments in the subject of Mathematics, Science, Urdu and English, using item bank of SBA grade 5, in September 2020 to the students of grade 6. There were 48 schools and 960 students from 6 sampled districts, participated in this diagnostic study.

The study was conducted with the reopening of schools and data analysis explored that, on an average, learning loss of the students in Constructed Response Questions (CRQs) is almost three times than their learning loss in Multiple Choice Questions (MCQs) in the subjects of Science and English, whereas seven times in Urdu and equal in Mathematics. In MCQs, learning loss in all four subjects is less than 10% and, in CRQs is about 20%. The students showed reversal academic performance in writing questions.

The Academic planning needs to be aligned with these results. Therefore, teachers should need to focus on all Students Learning Outcomes (SLOs) related to CRQs while teaching at grade 5 and their associated progressive SLOs in grade 6. The learning loss in MCQs (less than 10%) is negligible and linked with other factors like retention rate etc. may also be affecting other than closure of schools due to COVID-19. It is recommended that teachers should use differentiated teaching techniques and may also extend teaching timings. A list of SLOs, based on analysis of the data attained from this diagnostic study on learning loss, is prepared for teachers to focus on them while teaching to grade 5 and their progressive SLOs in teaching students at grade 6, so that we may reduce learning losses and achievement gaps among different ability groups of students of same grade.

I am thankful to the Chairman Punjab Examination Commission for his guidance on the development of idea and all commission members for technical support to refine the methodology and executing of the study. PEC team for untiring effort to take up the task within a short span of time. I am hopeful these results will lead us to better planning and decision making.

Tariq Iqbal
Chief Executive Officer
Punjab Examination Commission (PEC)

INTRODUCTION

Education systems around the globe were not built to deal with extended shutdowns like those caused by the COVID-19 pandemic. This pandemic caused widespread school closures in 188 countries and 1.7 billion children, young people and their families have been disrupted as a direct result (OECD, 2020). Students stuck at homes and teaching-learning processes almost seized due to the school shutdowns with a risk of learning losses for these students.

The term learning loss refers to any specific or general loss of knowledge and skills or to reversals in academic progress, most commonly due to extended gaps or discontinuities in a student's education. Learning loss can be manifested in a wide variety of ways for a number of reasons.

School Education Department (SED) re-opened the high and middle schools from 15th September 2020. Due to schools shutdown since mid of March 2020 till re-opening of the schools, students faced learning loss in their academic performance. PEC designed a diagnostic study to estimate learning loss of Grade 5 students' using results and item bank of SBA as reference point in Punjab where all schools were shut down due to COVID-19.

METHODOLOGY/DESIGN OF STUDY

The School Based Assessment (SBA) of Grade 5 was conducted across Punjab by the schools in March 2020 by using a standardized item bank provided by the PEC. However, with the spread of Pandemic and closure of schools, SBA was concluded. An online feedback survey was conducted by Punjab Education Sector Reforms Programme (PESP-III) and it showed that there were six (6) districts (Bahawalnagar, Gujrat, Hafizabad, Khanewal, Layyah and Lodhran) where all six papers of SBA were conducted before shut down. Only these six districts were included in the study because students' marked papers and overall results were available. The marked papers of the students of the sampled schools were collected at PEC office. New tests for the diagnostic study of learning loss in the subjects of Mathematics, Science, English and Urdu were developed from already provided item banks of the respective subjects in the schools for SBA. Newly developed tests were conducted in the sampled schools and the results were compared with that of the SBA. Reversal in academic progress in each subject was treated as learning loss due to COVID-19.

Sampling:

Sample of eight schools (two urban female, two urban male, two rural female and two rural male) from each of the selected district and 20 students from each of the sampled school were selected for study. In this way total 48 schools and 960 students participated in the diagnostic study of learning loss.



Procedure:

Six PEC focal persons were trained to supervise the study in the six districts. Five provincial monitors also deputed to ensure credibility of the study. These provincial monitors were also trained at PEC office. Detailed Standard Operating Procedures (SOPs) for training, conduct, marking and data entry were developed after several consultative dialogues within PEC. The study was carried out from 24th September 2020 to 30th September 2020 following all SOPs issued by Govt. of the Punjab for safety from COVID-19.



CHAIRMAN & CEO PEC VISITED THE CENTER

Limitations:

The following were the limitations/ challenges faced during this study:

1. In primary schools, tracking of the students and their results was not easy as the students from primary schools got admission in different schools when promoted to higher grade. So, the students from the elementary schools and those of the high schools participated in the study, because mostly their grade 5 students are retained in grade 6 in the same schools.
2. Each school had constructed its own papers from PEC's given item bank so papers from these schools had to be collected and get printed of these multiple versions.
3. There may be many factors—e.g. retention rate etc. causing students' learning loss but PEC considered only factor of school closure due to pandemic COVID-19 and some reasons explored due to face-to-face students' structured interviews.
4. The results of this study are significant enough for its findings on the basis of analysis to be applied across Punjab, even if the study was conducted in 6 districts.

DATA ANALYSIS AND FINDINGS

Data was analysed by PEC team and following are important results:

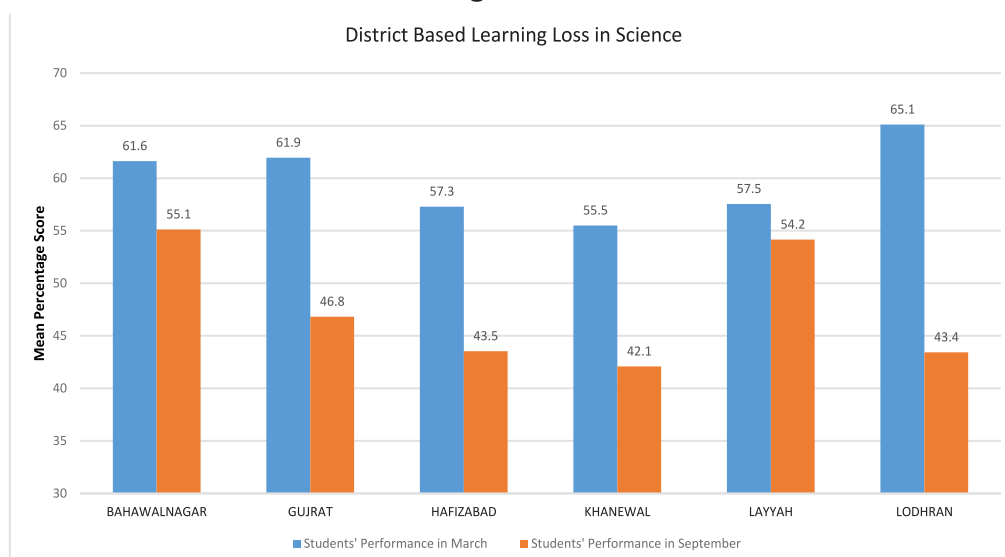
Table No.1 shows the summary of differences in students' performance in MCQs and CRQs in the subject of science in March 2020 and September 2020 respectively.

Table No.1: Students' Learning Loss in Science Grade 5

District	Science MCQs			Science CRQs			Overall (LL MCQs + LL CRQs)	Average
	Mean % of Performance in SBA in March 2020	Mean % of Performance after COVID-19 in September 2020	Mean % of Learning Loss due to COVID-19	Mean % of Performance in SBA in March 2020	Mean % of Performance after COVID-19 in September 2020	Mean % of Learning Loss due to COVID-19		
Bahawalnagar	67.1	65.6	-1.6	56.1	44.7	-11.4	-13.0	-6.5
Gujrat	63.2	58.5	-4.7	60.7	35.1	-25.6	-30.3	-15.1
Hafizabad	64.5	53.4	-11.1	50.1	33.7	-16.4	-27.5	-13.8
Khanewal	55.6	50.5	-5.2	55.3	33.7	-21.7	-26.8	-13.4
Layyah	66.2	63.9	-2.3	48.9	44.4	-4.5	-6.8	-3.4
Lodhran	68.1	56.6	-11.5	62.1	30.3	-31.8	-43.4	-21.7
Overall Average	64.0	58.0	-6.0	55.5	37.0	-18.5	-24.6	-12.3

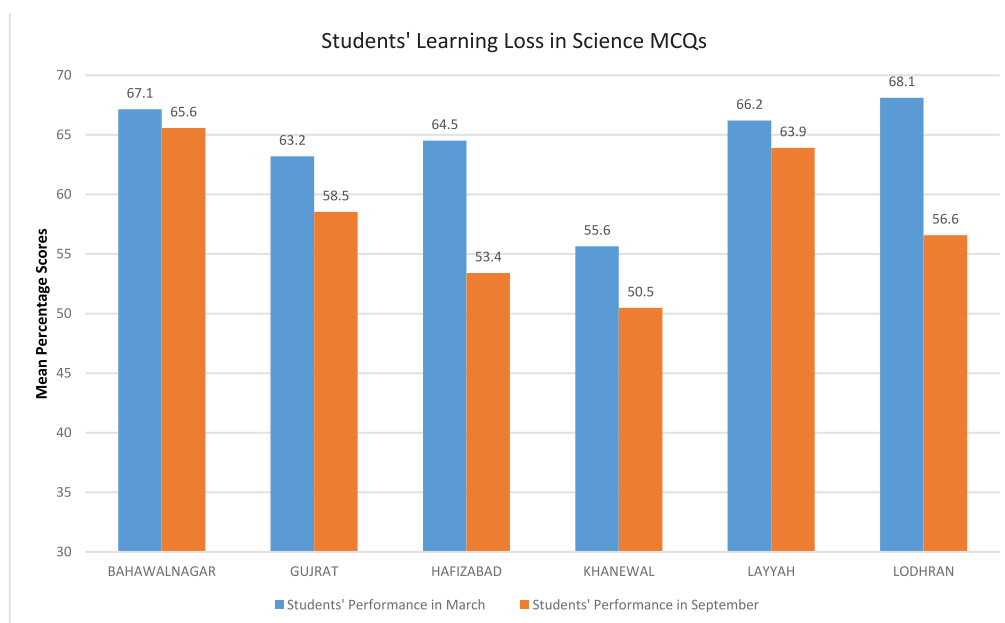
Graph No.1 explores that students of grade 5 are showing poor performance in the subject of science in September 2020 as compared to their performance in March 2020 against same SLOs in all six districts. Therefore students of all six districts show a reversal in their academic performance in the subject of science due to school closure during COVID-19 in Punjab. Highest (-21.7%) and least (-3.4%) reversal in students academic performance in science is found in districts Lodhran and Layyah respectively.

Graph No. 1: District Based Students' Learning Loss in Science Grade 5 Due to COVID-19 in Punjab



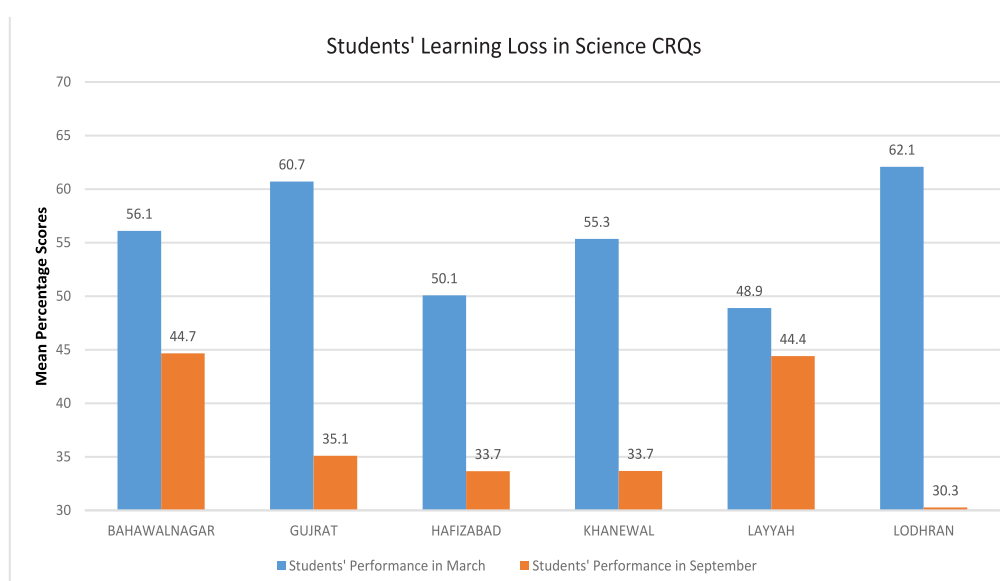
Graph No.2 explores that students of grade 5 are showing poor performance in science MCQs in September 2020 as compared to their performance in March 2020 against same SLOs in all six districts. Therefore students of all six districts show a reversal in their academic performance in science MCQs due to school closure during COVID-19 in Punjab. Highest (-11.5%) and least (-1.6%) reversal in students' academic performance in science is found in districts Lodhran and Bahawalnagar respectively.

Graph No.2: Overall Students' Learning Loss in Science MCQs Grade 5 Due to COVID-19 in Punjab



Graph No.3 explores that students of grade 5 are showing poor performance in science CRQs in September 2020 as compared to their performance in March 2020 against same SLOs in all six districts. Therefore students of all six districts show a reversal in their academic performance in science CRQs due to school closure during COVID-19 in Punjab. Highest (-31.8%) and least (-4.5%) reversal in students' academic performance in science is found in districts Lodhran and Layyah respectively.

Graph No. 3: Overall Students' Learning Loss in Science CRQs Grade 5 Due to COVID-19 in Punjab



Graph No.4 explores that both male and female students of grade 5 are showing poor performance in science in September 2020 as compared to their performance in March 2020 against same SLOs in all six districts. Therefore both male and female students of all six districts show a reversal in their academic performance in science due to school closure during COVID-19 in Punjab. Except Lodhran and Khanewal, female students performed better in March 2020 in remaining four districts. In Lodhran, both male and female students performed almost equally while in Khanewal male students performed better than female students. In Layyah, reversal of academic performance of female students due to COVID-19 is negligible but male students showed reversal (-5.9%) in their performance. In remaining five districts both male and female students showed reversal in their academic performance due to closure of schools during COVID-19.

Graph No. 4: Gender Based Overall Students' Learning Loss in Science Grade 5 Due to COVID-19 in Punjab

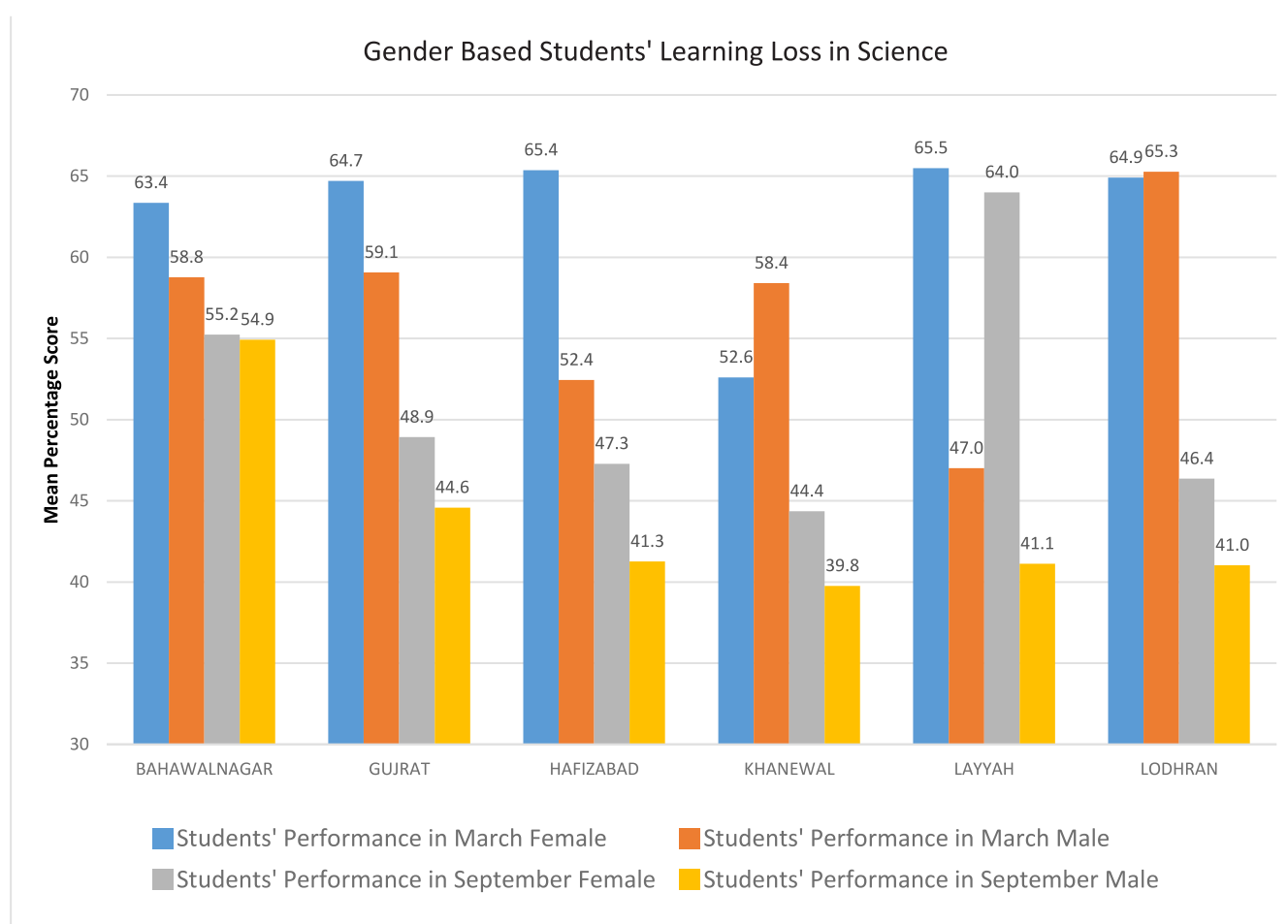


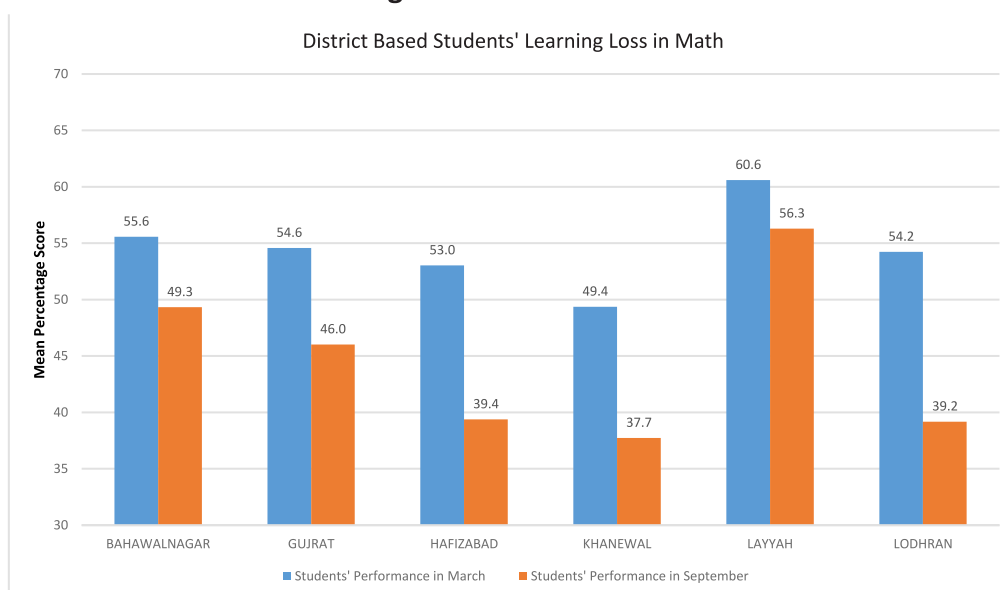
Table No.2 shows the summary of differences in students' performance in MCQs and CRQs in the subject of Mathematics in March 2020 and September 2020 respectively.

Table No. 2: Students' Learning Loss in Mathematics Grade 5

District	Math MCQs			Math CRQs			Overall (LL MCQs + LL CRQs)	Average
	Mean % of Performance in SBA in March 2020	Mean % of Performance after COVID-19 in September 2020	Mean % of Learning Loss due to COVID-19	Mean % of Performance in SBA in March 2020	Mean % of Performance after COVID-19 in September 2020	Mean % of Learning Loss due to COVID-19		
Bahawalnagar	62.83	58.45	-4.38	48.31	40.19	-8.12	-12.5	-6.25
Gujrat	62.81	53.73	-8.5	46.34	38.32	-7.93	-16.43	-8.215
Hafizabad	60.48	46.6	-13.91	45.58	32.16	-13.85	-27.76	-13.88
Khanewal	55.84	47.22	-8.8	42.90	28.24	-14.66	-23.46	-11.73
Layyah	69.37	62.25	-7.09	51.81	50.33	-1.61	-8.7	-4.35
Lodhran	65.26	52.31	-13.23	43.20	26.05	-17.15	-30.38	-15.19
Overall Average	62.82	53.42	-9.36	46.35	35.87	-10.54	-19.9	-9.95

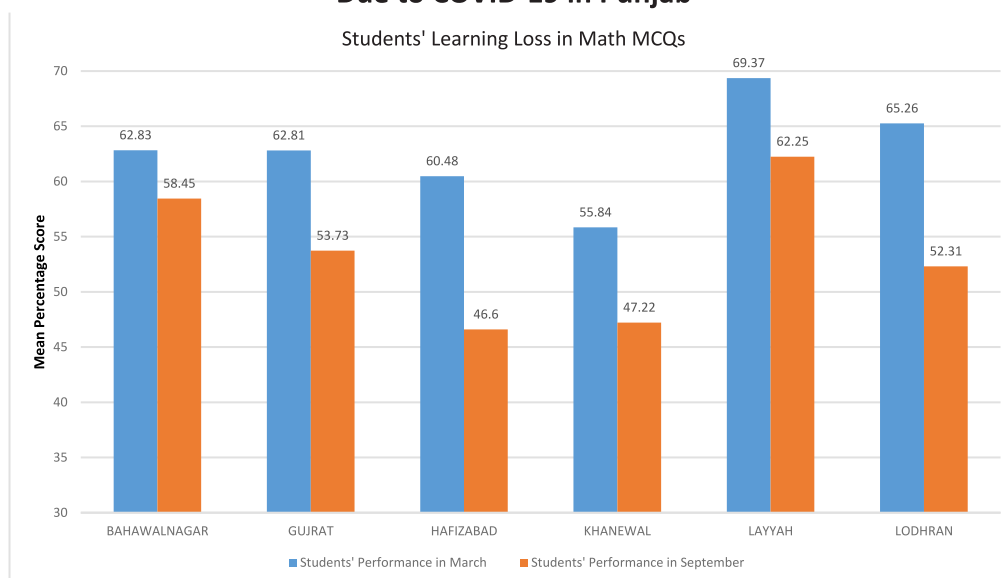
Graph No.5 explores that students of grade 5 are showing poor performance in the subject of Mathematics in September 2020 as compared to their performance in March 2020 against same SLOs in all six districts. Therefore students of all six districts show a reversal in their academic performance in the subject of Mathematics due to school closure during COVID-19 in Punjab. Highest (-15.0%) and least (-4.3%) reversal in students' academic performance in science is found in districts Lodhran and Layyah respectively.

Graph No. 5: Overall Students' Learning Loss in Mathematics Grade 5 Due to COVID-19 in Punjab



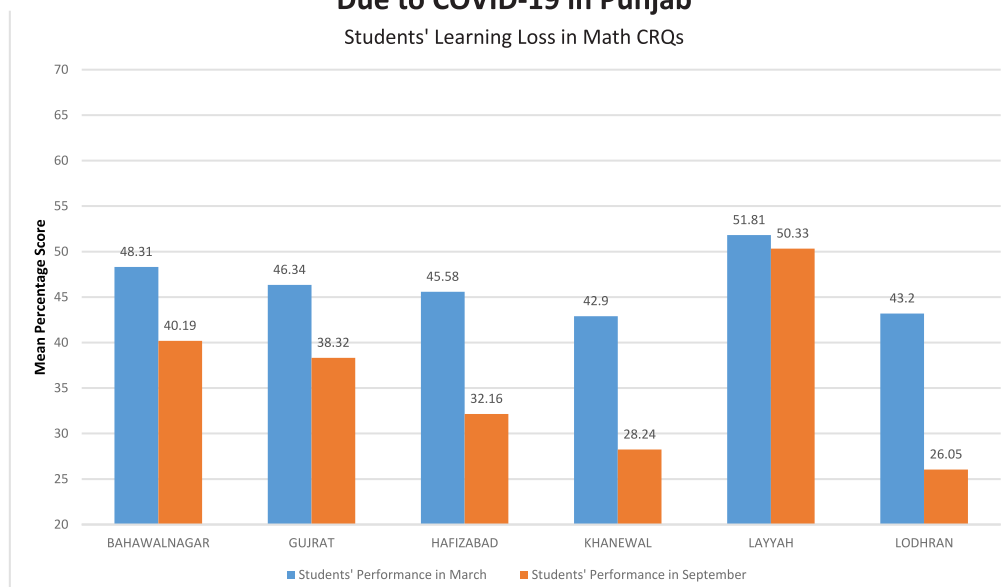
Graph No.6 explores that students of grade 5 are showing poor performance in Mathematics MCQs in September 2020 as compared to their performance in March 2020 against same SLOs in all six districts. Therefore students of all six districts show a reversal in their academic performance in Mathematics MCQs due to school closure during COVID-19 in Punjab. Highest (-13.9%) and least (-4.3%) reversal in students' academic performance in Mathematics is found in districts Hafizabad and Bahawalnagar respectively.

Graph No. 6: Overall Students' Learning Loss in MCQs Mathematics Grade 5 Due to COVID-19 in Punjab



Graph No.7 explores that students of grade 5 are showing poor performance in Mathematics CRQs in September 2020 as compared to their performance in March 2020 against same SLOs in five districts while in Layyah, difference in students performance in March 2020 and September 2020 is almost negligible. Therefore students of five districts show a reversal in their academic performance in Mathematics CRQs due to school closure during COVID-19 in Punjab. Highest (-17.2%) and least (-1.6%) reversal in students' academic performance in Mathematics is found in districts Lodhran and Layyah respectively.

Graph No. 7: Overall Students' Learning Loss in CRQs Mathematics Grade 5 Due to COVID-19 in Punjab



Graph No.8 explores that both male and female students of grade 5 are showing poor performance in Mathematics in September 2020 as compared to their performance in March 2020 against same SLOs in five districts while in Layyah, male students exhibit slightly better (+1.6%) performance in September 2020 as compared to their performance in March 2020. Therefore female students of all six districts while male students in five districts show a reversal in their academic performance in Mathematics due to school closure during COVID-19 in Punjab. Students of Hafizabad and Layyah showed highest and least reversal of academic performance respectively due to COVID-19.

Graph No. 8: Gender Based Overall Students' Learning Loss in Mathematics Grade 5 Due to COVID-19 in Punjab

Gender Based Students' Learning Loss in Math

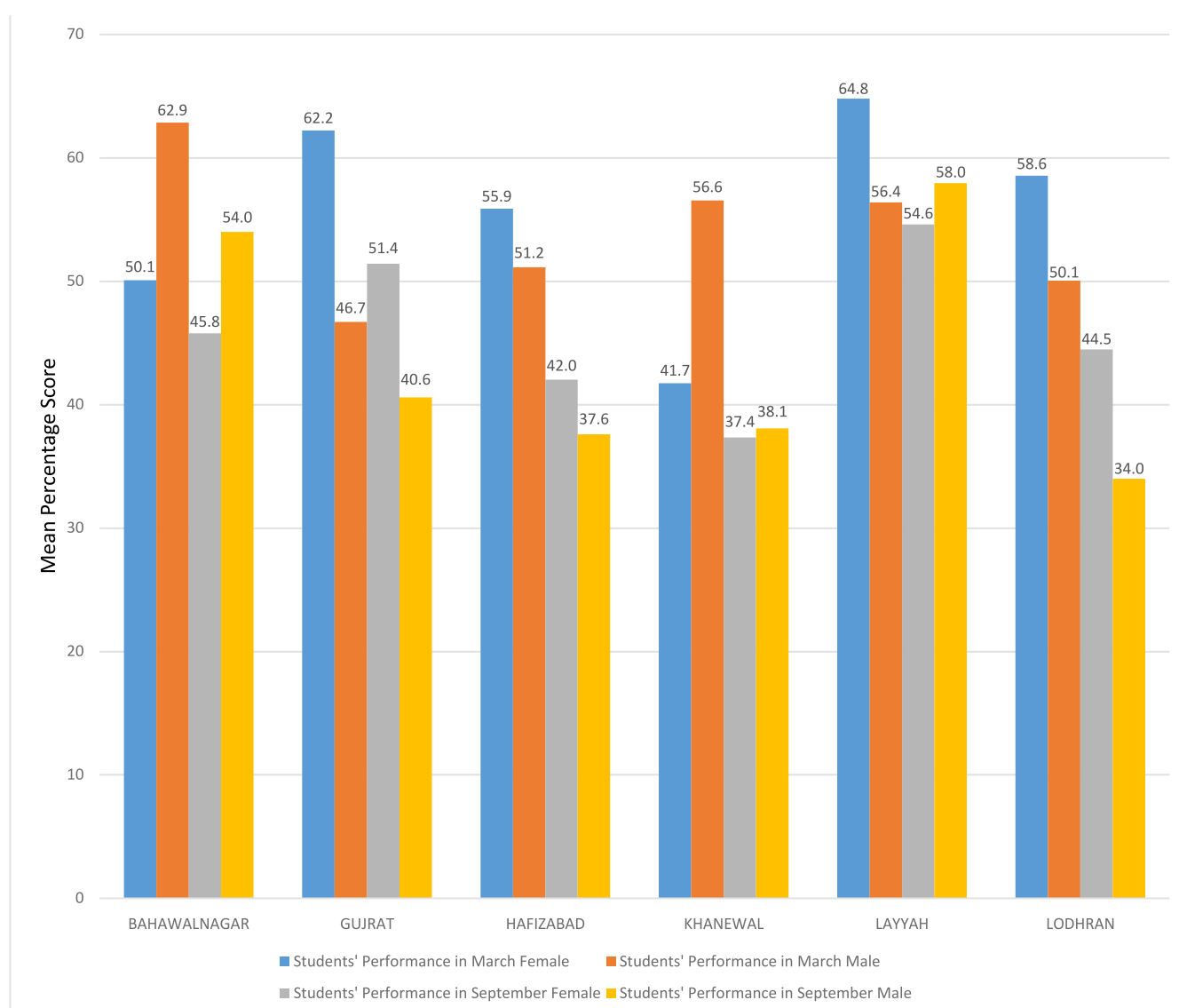


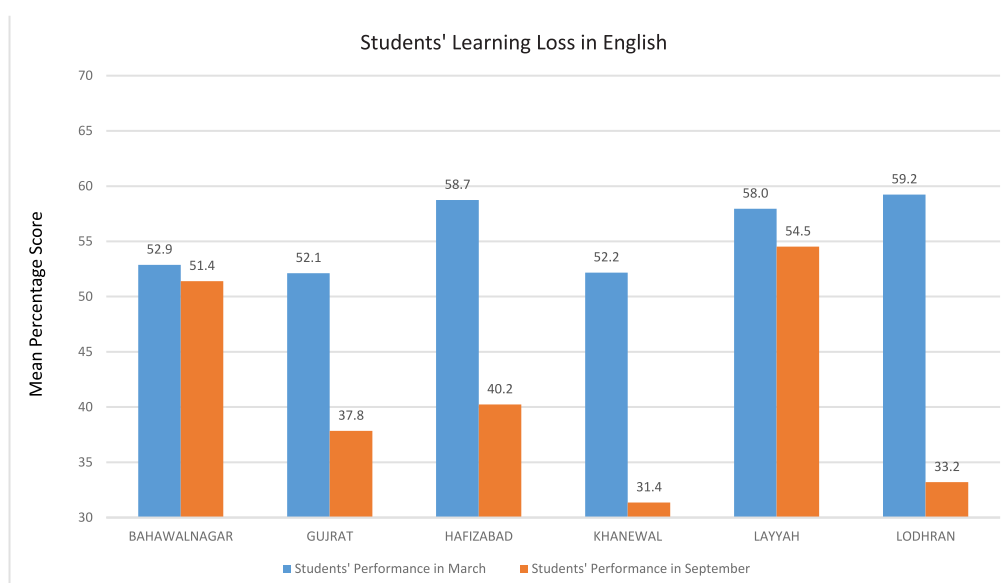
Table No.3 shows the summary of differences in students' performance in MCQs and CRQs in the subject of English in March 2020 and September 2020 respectively.

Table No. 3: Students' Learning Loss in English Grade 5

District	English MCQs			English CRQs			Overall (LL MCQs + LL CRQs)	Average
	Mean % of Performance in SBA in March 2020	Mean % of Performance after COVID-19 in September 2020	Mean % of Learning Loss due to COVID-19	Mean % of Performance in SBA in March 2020	Mean % of Performance after COVID-19 in September 2020	Mean % of Learning Loss due to COVID-19		
Bahawalnagar	56.3	60.4	4.1	49.5	42.4	-7.1	-3.0	-1.5
Gujrat	54.3	51.6	-2.7	50.0	24.1	-25.9	-28.6	-14.3
Hafizabad	61.4	48.1	-13.2	56.1	32.3	-23.8	-37.0	-18.5
Khanewal	54.2	42.7	-11.5	50.1	20.0	-30.1	-41.6	-20.8
Layyah	65.0	61.2	-3.8	50.9	47.8	-3.1	-6.9	-3.4
Lodhran	65.7	45.9	-19.8	52.7	20.5	-32.3	-52.1	-26.0
Overall Average	59.4	51.7	-7.6	51.5	31.3	-20.2	-27.8	-13.9

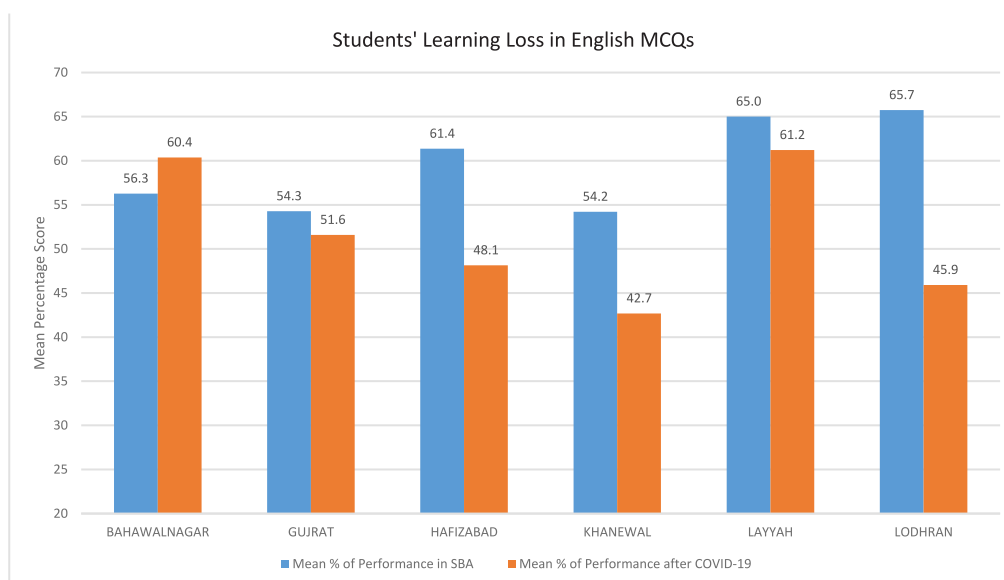
Graph No.9 explores that students of grade 5 are showing poor performance in the subject of English in September 2020 as compared to their performance in March 2020 against same SLOs in all six districts. Therefore students of all six districts show a reversal in their academic performance in the subject of English due to school closure during COVID-19 in Punjab. Highest (-26.0%) and least (-1.5%) reversal in students' academic performance in English is found in districts Lodhran and Bahawalnagar respectively.

Graph No. 9: Overall Students' Learning Loss in English Grade 5 Due to COVID-19 in Punjab



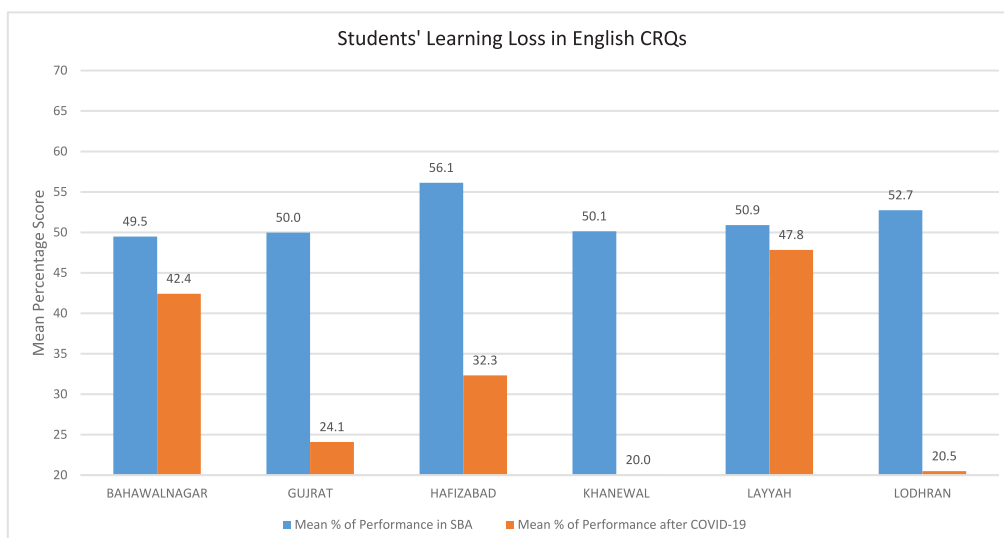
Graph No.10 explores that students' of grade 5 are showing poor performance in English MCQs in September 2020 as compared to their performance in March 2020 against same SLOs in five districts while in Bahawalnagar, students perform better (4.1%) in September 2020 as compared to their performance in March 2020 . Therefore students of five districts show a reversal in their academic performance in English MCQs due to school closure during COVID-19 in Punjab. Highest (-19.8%) and least (-2.7%) reversal in students academic performance is found in districts Lodhran and Gujrat respectively.

Graph No. 10: Overall Students' Learning Loss in English MCQs Grade 5 Due to COVID-19 in Punjab



Graph No.11 explores that students of grade 5 are showing poor performance in English CRQs in September 2020 as compared to their performance in March 2020 against same English SLOs in all six districts. Therefore students show a reversal in their academic performance in English CRQs due to school closure during COVID-19 in Punjab. Highest (-32.3%) and least (-3.1%) reversal in students' academic performance in English CRQs is found in districts Lodhran and Layyah respectively.

Graph No. 11: Overall Students' Learning Loss in English CRQs Grade 5 Due to COVID-19 in Punjab



Graph No.12 explores that both male and female students' of grade 5 are showing poor performance in English in September 2020 as compared to their performance in March 2020 against same SLOs in five and four districts respectively while in Bahawalnagar, both male and female students exhibit almost same performance and in Gujrat, female students showed slightly better (+3.6%) in September 2020 as compared to their performance in March 2020. Therefore female students of all six districts while male students in five districts show a reversal in their academic performance in Mathematics due to school closure during COVID-19 in Punjab. Students of Hafizabad and Layyah showed highest and least reversal of academic performance respectively due to COVID-19.

Graph No. 12: Gender Based Overall Students' Learning Loss in English Grade 5 Due to COVID-19 in Punjab

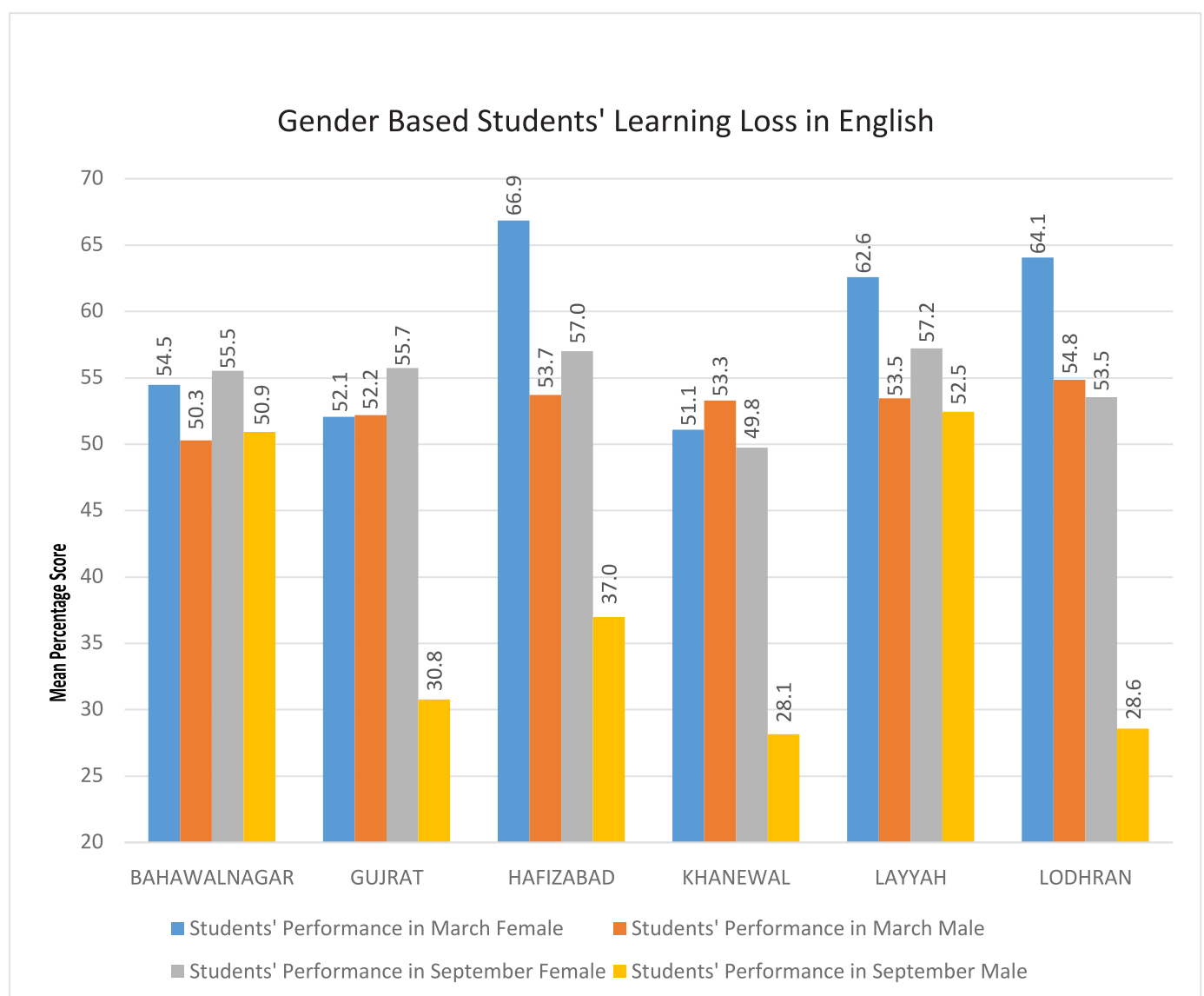


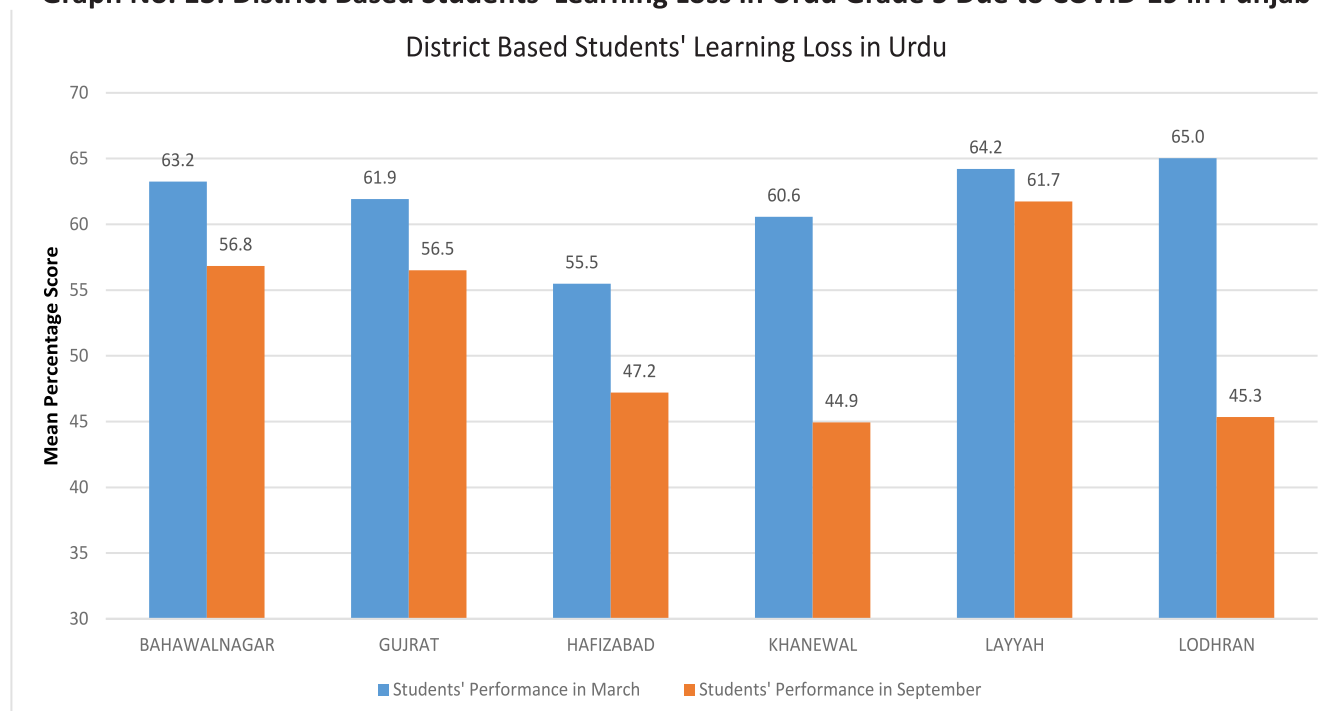
Table No.4 shows the summary of differences in students' performance in MCQs and CRQs in the subject of Urdu in March 2020 and September 2020 respectively.

Table No. 4: Students' Learning Loss in Urdu Grade 5

District	Urdu MCQs			Urdu CRQs			Overall (LL MCQs + LL CRQs)	Average
	Mean % of Performance in SBA in March 2020	Mean % of Performance after COVID-19 in September 2020	Mean % of Learning Loss due to COVID-19	Mean % of Performance in SBA in March 2020	Mean % of Performance after COVID-19 in September 2020	Mean % of Learning Loss due to COVID-19		
Bahawalnagar	72.59	73.79	1.21	53.90	39.87	-14.3	-12.82	-6.41
Gujrat	61.82	65.34	3.51	62.01	47.70	-14.32	-10.80	-5.40
Hafizabad	60.10	62.77	2.67	50.86	31.63	-19.22	-16.55	-8.28
Khanewal	59.08	63.46	4.39	62.06	26.43	-35.63	-31.24	-15.62
Layyah	75.57	77.13	1.56	52.87	46.37	-6.51	-4.95	-2.48
Lodhran	61.16	63.36	2.20	68.91	27.32	-41.59	-39.39	-19.70
Overall Average	65.07	67.67	2.60	58.33	36.64	-21.69	-19.09	-9.55

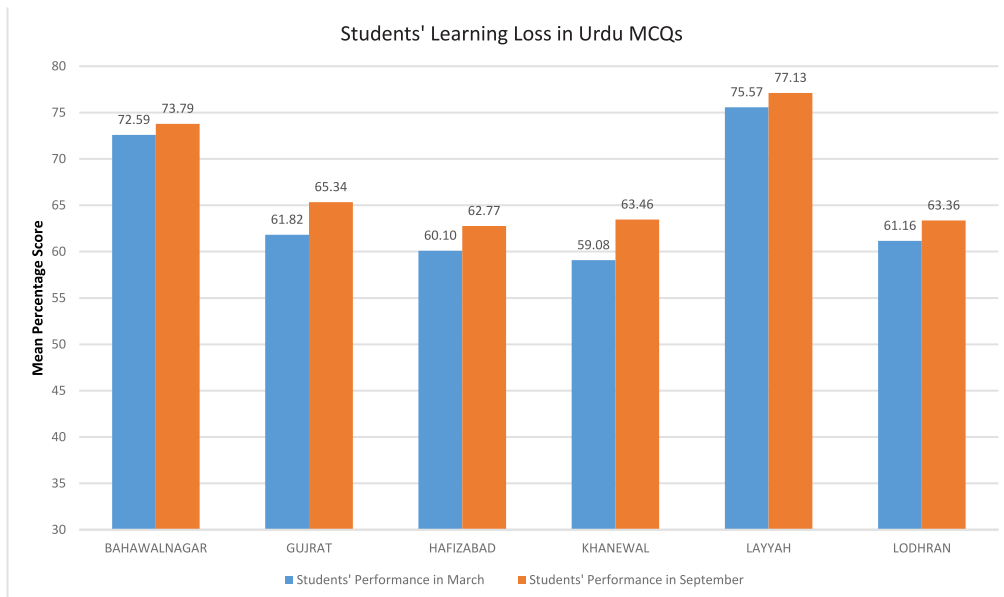
Graph No.13 explores that students of grade 5 are showing poor performance in the subject of Urdu in September 2020 as compared to their performance in March 2020 against same SLOs in all six districts. Therefore students of all six districts show a reversal in their academic performance in the subject of English due to school closure during COVID-19 in Punjab. Highest (-19.7%) and least (-2.5%) reversal in students' academic performance in English is found in districts Lodhran and Layyah respectively.

Graph No. 13: District Based Students' Learning Loss in Urdu Grade 5 Due to COVID-19 in Punjab



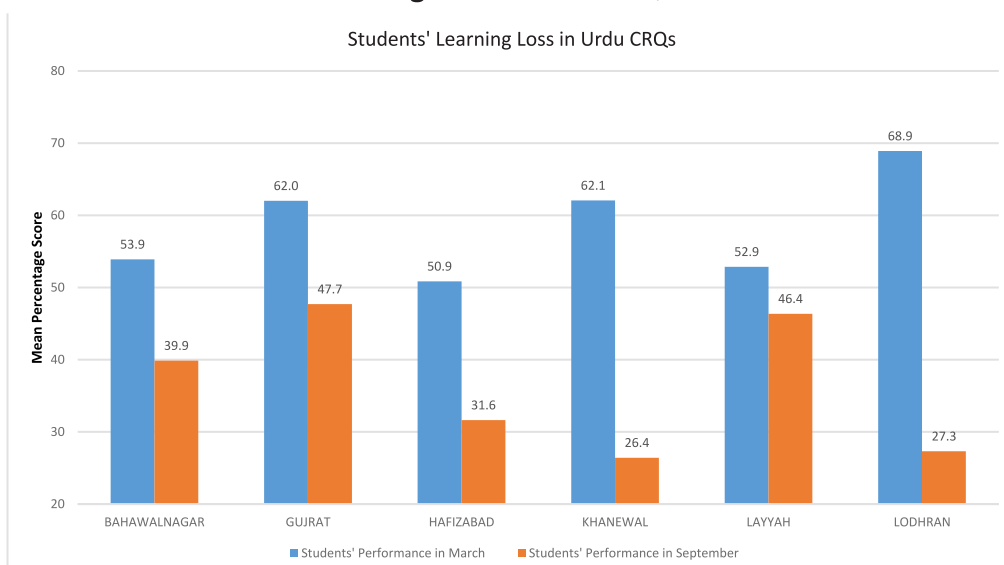
Graph No.14 explores that students of grade 5 are showing better performance in Urdu MCQs in September 2020 as compared to their performance in March 2020 against same Urdu SLOs in six districts. Therefore students of all six districts show a gain in their academic performance in Urdu MCQs due to school closure during COVID-19 in Punjab. Highest (+4.39%) and least (+1.21%) gain in students' academic performance is found in districts Lodhran and Gujrat respectively.

Graph No. 14: Overall Students' Learning Loss in Urdu MCQs Grade 5 Due to COVID-19 in Punjab



Graph No.15 explores that students' of grade 5 are showing better performance in Urdu CRQs in September 2020 as compared to their performance in March 2020 against same Urdu SLOs in six districts. Therefore students of all six districts show a reversal in their academic performance in Urdu CRQs due to school closure during COVID-19 in Punjab. Highest (-41.59%) and least (-6.51%) reversal in students' academic performance is found in districts Lodhran and Layyah respectively.

Graph No. 15: Overall Students' Learning Loss in Urdu CRQs Grade 5 Due to COVID-19 in Punjab



Graph No.16 explores that both male and female students of grade 5 are showing poor performance in Urdu in September 2020 as compared to their performance in March 2020 against same SLOs in all six districts. Therefore both male and female students of all six districts show a reversal in their academic performance in Urdu due to school closure during COVID-19 in Punjab. Students of Lodhran and Layyah showed highest and least reversal of academic performance respectively due to COVID-19.

Graph No. 16: Gender Based Overall Students' Learning Loss in Urdu Grade 5 Due to COVID-19 in Punjab

Gender Based Students' Learning Loss in Urdu

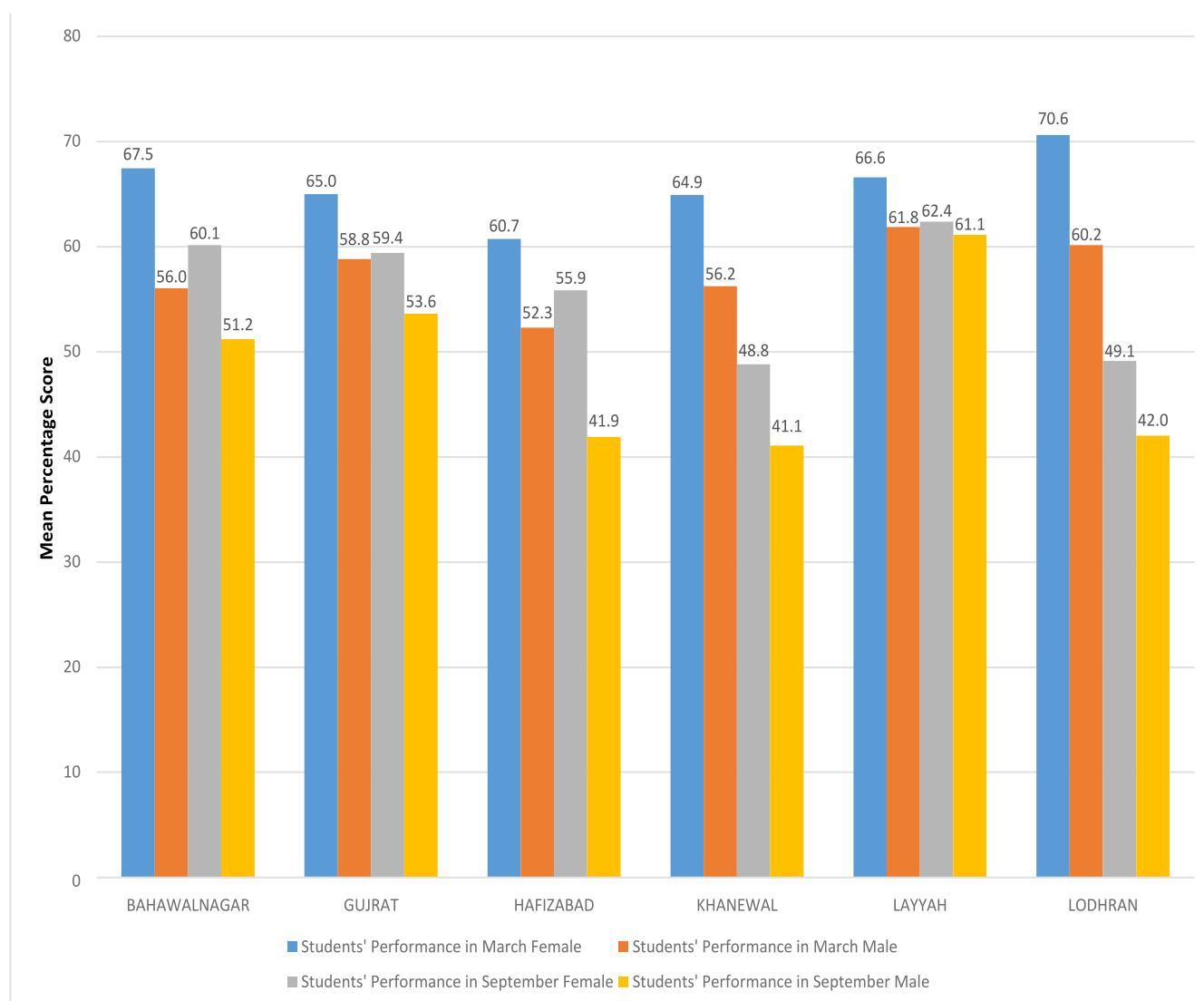


Table No.5: Subject Wise Overall Reversal in Academic Progress/Learning Loss

District	Subject Wise Overall Reversal in Academic Progress/Learning Loss During School Closure from 14th March 2020 to 22nd September 2020									
	CRQs					MCQs				
	English	Urdu	Science	Math	English	Urdu	Science	Math		
Bahawalnagar	-7.06	-14.03	-11.43	-8.12	4.10	1.21	-1.57	-4.38		
Gujrat	-25.87	-14.32	-25.61	-8.02	-2.68	3.51	-4.66	-9.08		
Hafizabad	-23.80	-19.22	-16.42	-13.42	-13.22	2.67	-11.10	-13.88		
Khanewal	-30.10	-35.63	-21.66	-14.66	-14.66	4.39	-5.17	-8.62		
Layyah	-3.07	-6.51	-4.49	-1.48	-1.48	1.56	-2.29	-7.12		
Lodhran	-32.25	-41.59	-31.82	-17.15	-17.15	2.20	-11.54	-12.95		
Overall Average	-20.36	-21.88	-18.57	-10.48	-10.48	2.59	-6.05	-9.34		

Table No. 5 explored that on an average students learning loss in CRQs is almost triple than learning loss in MCQs in the subject of Science and English, seven times in Urdu and equally in Mathematics. The learning loss in the MCQs in all four subjects is less than 10% while in CRQs it is about 20%. Therefore students showed reversal academic performance in writing questions (CRQs). Therefore teachers should focus on all SLOs related to CRQs in their teaching at grade 5 and its related progressive SLOs in grade 6. The learning loss in the MCQs (less than 10%) may be ignored because there may other factors—retention rate etc. causing learning loss than closure of schools due to COVID-19.

Table No.6 Gender Wise Reversal in Academic Progress/Learning Loss

District		Gender Wise Reversal in Academic Progress/Learning Loss During School Closure from 14th March 2020 to 22nd September 2020								
		CRQs				MCQs				Overall Average
		English	Urdu	Science	Math	English	Urdu	Science	Math	
Female	Bahawalnagar	-7.8	-15.1	-18.7	-3.6	2.1	0.4	2.5	-5.0	-5.6
	Gujrat	-21.1	-14.7	-30.7	-10.4	7.3	3.5	-0.9	-11.3	-9.8
	Hafizabad	-23.0	-15.1	-28.6	-14.6	-19.7	5.4	-7.6	-13.1	-14.5
	Khanewal	-30.2	-36	-17.0	-10.9	-2.7	4.8	0.5	2.1	-11.3
	Layyah	-1.2	-10	-0.2	-9.5	-10.7	2.4	-2.8	-10.9	-5.5
	Lodhran	-29.8	-44.3	-31.3	-15.3	-21.1	1.3	-5.8	-12.8	-19.9
	Overall Average	-18.9	-22.8	-21.1	-10.7	-7.4	3.0	-2.4	-8.5	-11.1
Male	Bahawalnagar	-6.0	-12.2	0.6	-14.1	7.3	2.6	-8.3	-3.6	-4.2
	Gujrat	-30.1	-13.9	-20.3	-5.8	-12.8	3.5	-8.6	-6.5	-11.8
	Hafizabad	-24.2	-21.8	-.2	-12.7	-9.2	1.0	-13.2	-14.4	-13.0
	Khanewal	-30.0	-34.3	-26.5	-18.2	-20.3	4.0	-10.8	-18.7	-1.4
	Layyah	-4	-2.1	-10.4	6.5	2.9	0.7	-1.4	-3.4	-1.5
	Lodhran	-34.3	-39.3	-32.2	-18.9	-18.2	3.0	-16.3	-13.2	-21.2
	Overall Average	-21.6	-20.6	-16.3	-10.5	-8.4	2.5	-9.8	-10.0	-11.8

Table No.6 explores that both male and female students showed almost equal learning loss about 20% on CRQs in four subjects and both male and female students showed almost equal learning loss about 10% on MCQs in three subjects while both male and female students showed almost equal learning gain about 3.0% in Urdu MCQs. So both male and female teachers may be trained for such teaching strategies to reduce students learning loss.

Table No. 7: Comparison of Reversal in Academic Progress/Learning Loss of low and high Achievers Students Grade 5 Due to COVID-19

Academic Learning Loss/Reversal During School Closure from 14th March 2020 to 22nd September 2020				
Subject	Students Ranking	Performance in March 2020	Performance in September 2020	Learning Loss Due to COVID-19
Science	High Performing	69.39	51.18	-18.21
	Low Performing	48.83	43.21	-5.62
	Difference of Learning	-20.56	-7.97	-12.58
Math	High Performing	65.94	48.35	-17.59
	Low Performing	42.40	40.80	-1.60
	Difference of Learning	-23.54	-7.55	-15.99
English	High Performing	64.71	42.43	-22.28
	Low Performing	42.93	36.98	-5.95
	Difference of Learning	-21.78	-5.44	-16.33
Urdu	High Performing	-69.72	56.01	-13.71
	Low Performing	53.33	48.04	-5.28
	Difference of Learning	-16.39	-7.97	-8.42

Table No. 7 It is observed that school closure has affected high performers much more than low performers in all four subjects across all six districts. It is a real loss of the nation. Teachers should focus innovative remedial strategies for all students especially for those students who are expected professionals and experts of the future.

Students' Interview:

An interview protocol was developed in form of a questionnaire. Following were the questions of interview protocol:

1. During COVID-19 break did you read an Urdu book?
2. During COVID-19 break did you read an English book?
3. During COVID-19 break did you read a Mathematics book?
4. During COVID-19 break did you read a Science book?
5. During COVID-19 break did you read any book other than textbooks?
6. Have you attended any online class during the COVID-19 break?
7. The duration of class you attended online during COVID-19 break is:
8. Have you attended tuition class?
9. Were you taught Urdu at tuition centre?
10. Were you taught English at tuition centre?
11. Were you taught Mathematics at tuition centre?
12. Were you taught Science at tuition centre?
13. Did any family member teach you Urdu at home?
14. Did any family member teach you English at home?
15. Did any family member teach you Mathematics at home?
16. Did any family member teach you Science at home?

Each Test Administrator interviewed each of the participated students and recorded their responses on questionnaire sheet.

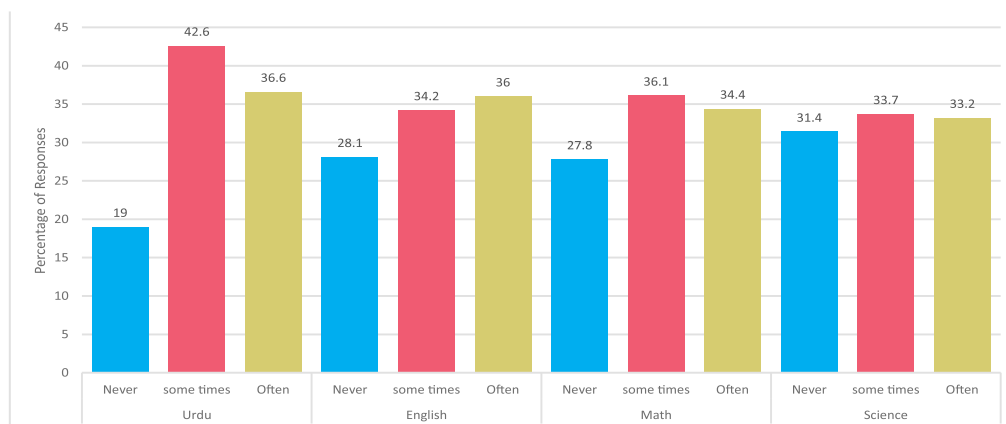


In response of the following questions, the students' responses are shown in graph No. 17

1. During COVID-19 break you read Urdu book
2. During COVID-19 break you read English book
3. During COVID-19 break you read Mathematics book
4. During COVID-19 break you read Science book

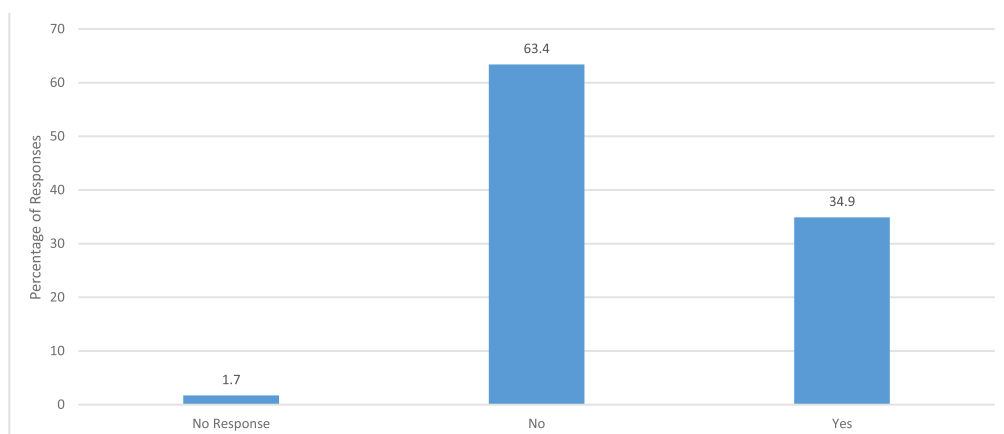
Graph No. 17 explored that except Urdu, about one third students never read, sometimes read or often read one or all three textbook of Math, Science and English at home respectively.

Graph No. 17: During COVID-19 break you read Urdu, English, Math or Science Textbook



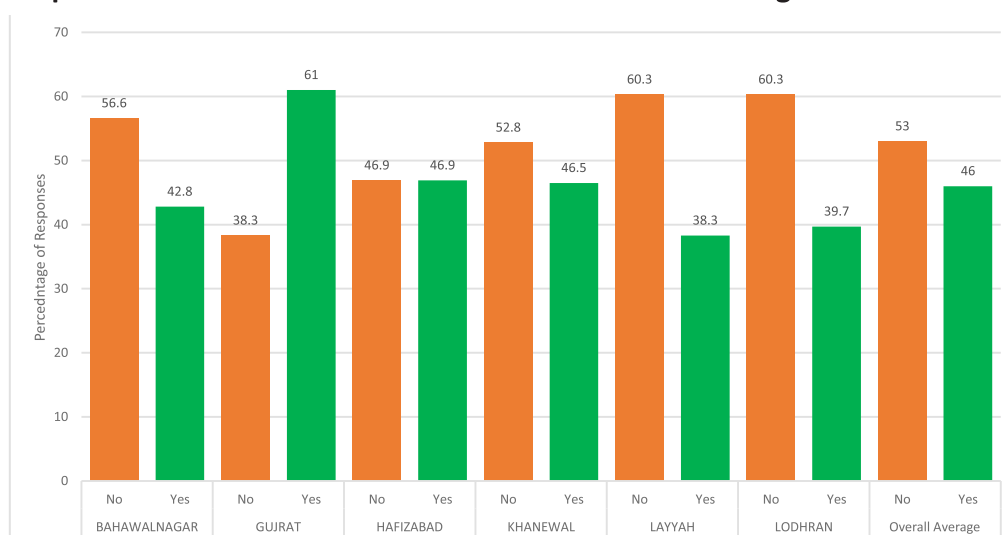
Graph No. 18 shows that in response to question “During COVID-19 break you read any book other textbook” majority (about 63.4%) of students did not read any book other than textbook at home during closure of schools due to pandemic COVID-19 while a reasonable number of students (34.9%) read any book other than textbook.

Graph No. 18: Have Students' Read books other than textbooks During COVID-19 break?



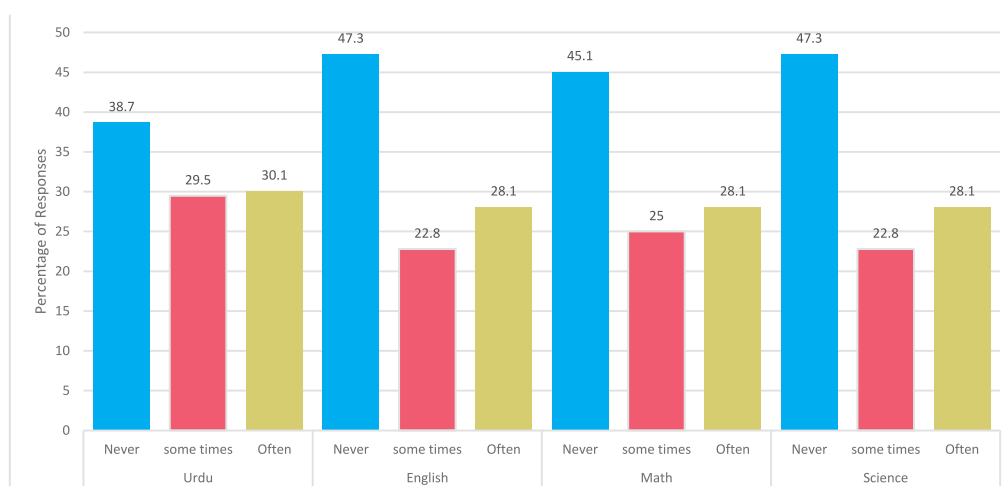
The responses to question “Did you attend tuition class?” are shown in graph No. 19. It is explored that on an average 56% students of grade 5 did not attend tuition class during closure of schools due to pandemic COVID-19. Highest number of students (61%) in district Gujrat attend tuition classes even then reversal in academic learning of both male and female students is about (10%). In contrast, about 60.3% students did not attend any tuition class in Layyah but reversal in academic learning of female students is about (-5.5%) and male students is about (-1.5%) only.

Graph No. 19: Have Students' attended tuition class During COVID-19 break?



Graph No. 20 explored that average 44% students did not get any academic support by any family member during COVID-19 for the subjects Science, Math, English and Urdu.

Graph No. 20: Academic Support by Family members during COVID-19



DISCUSSION AND INTERPRETING RESULTS

From table No.5, it is observed that mean percentage performance in SBA has dropped down in Constructed Response Questions (CRQs) in all four subject—Mathematics, Science, English and Urdu due to COVID-19 and other factors. The international studies indicating that school closures have affected students' learning in different ratios all over the world. According to Kuhfeld, et al (2020), **learning loss during the COVID-19 school closures would not be universal**, and students **potentially showed gain in reading**. This finding is also aligned with our study results in **Urdu as reading comprehension based MCQs showed gain in all six districts** while results in CRQs of Urdu and English showed a **significant fall in students' learning**.

From table No. 7, it is observed that school closure has much affected **high performers than low performers** in all four subjects across all six districts. It is a real loss of the nation. Government should focus remedial strategies for all students especially for those students who are expected professionals and experts of the future.

In the contrast, World Bank Report (2020) stated that school **closures have impacted students' learning** across the system and In the case of lower secondary students, the share of **students that do not attain the minimum competencies can increase 25%** because of the immediate shocks. This information is **somewhat aligned with PEC study** which stated that students of grade 5 showed a **learning loss within range -10.0 to -21.6 percent** (Table No.6).

Almost all students' from all 48 sampled schools from six districts showed a down **fall in all four subjects based on CRQs type questions**. Students **learning loss in CRQs is almost three times than learning loss in MCQs** in the subject of Science and English, seven times in Urdu and equally in Mathematics. MCQs type questions also showed a reversal in students' academic progress but less than as compared to CRQs type questions. Most of the MCQs questions assessed students' knowledge and understanding level while **mostly CRQs questions assessed students' application and higher cognitive level**. So it may concluded that students' showed a **reversal in their academic progress in higher order thinking areas**. Therefore teachers should focus on all CRQs related SLOs in their teaching at grade 5 and its related progressive SLOs in grade 6. **The learning loss in MCQs (about less than 10%) may be ignored** because there may other factors—retention rate etc. causing learning loss than closure of schools due to COVID-19.

Students' interview explored that **almost 65% students did not read any book** other than textbooks. **About 50% students did not joined tuition centres and about 40% students did not supported by their any family member** in their academic progress. It is also explored that except Urdu, about one third students never read, sometimes read or often read one or all three textbook of Math, Science and English at home respectively.

These aspects of students' interview explored that **majority of students get relaxed** and maintained a distance from learning activities at home during pandemic COVID-19. Consequently closure of schools and students' getting relaxed and maintained a distance from learning activities **caused their learning losses and extending achievement gaps among different abilities groups of students**.

The results of this diagnostic type study to estimate students' learning loss in Punjab may be generalized to all schooling grades and further for students of higher education.

RECOMMENDATIONS

1. Teachers may review content that was taught to Grade 5 students and identify the progressive SLOs in Grade 6 curriculum and may provide additional instructional time or academic support to students' of Grade 6 for all identified application and higher order thinking level progressive SLOs.
2. Students' showed much more learning loss in Constructed Response Questions (CRQs) in all four subjects, so all SLOs related to CRQs of all four subjects in grade 5 and their progressive SLOs in grade 6 may be focused in teaching on priority bases. List of SLOs related to CRQs is attached at annexure A.
3. Students' may engaged in activity based teaching-learning process to enhance their learning retention.
4. Quaid-e-Azam Academy for Educational Development (QAED) and teacher training institutions train teachers to use differentiated teaching strategies that may helpful to the struggling as well as intelligent students to cope with their needs.
5. Schools may increase the amount of time (expanded learning time) (Zero periods may be introduced) for students to improve learning acquisition, or reduce learning loss.
6. Additional worksheets may be developed by PCTB to assist the students to cover the learning gaps.
7. Effective feedback and mentoring of homework may play a vital role in improving students learning.
8. Government should also implement appropriate actions to enable children to learn continuously both in schools and at home by expanding the definition of the right to education and introducing out-of-school time curriculum.
9. Schools should arrange writing completions and teacher should encourage students for creative writing.
10. Students may be encouraged to use school library.
11. Teachers use such formative assessment techniques that enhance students' higher order thinking skills
12. Widen the scope of Taleemi channel
13. DPs, district, tehsil and cluster level education authorities should implement effective mentoring system
14. Train teachers (for tailoring instruction) in ways that can continue to produce benefits beyond the reopening period to come back from the crisis stronger than before.
15. Punjab Examination Commission (PEC) include enriched items pool related to identified SLOs in item bank for School Based Assessment (SBA) grade 5.

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APPENDIX A

SCIENCE GRADE 5

SUMMARY OF WEAK SLOs SCIENCE GRADE-5

Content Area	SLO Statement	Cognitive Level
Life Science	Differentiate between vertebrates and invertebrates according to key characteristics.	Understanding
Life Science	Identify vertebrates and invertebrates from their surroundings.	Understanding
Life Science	Classify vertebrates into mammals, reptiles, fish, birds and amphibians on the basis of their characteristics.	Analyzing
Life Science	Describe the advantages and disadvantages of microorganisms in daily life.	Understanding
Life Science	Identify ways by which microorganisms can enter the human body.	Understanding
Life Science	Suggest ways to avoid infections.	Understanding
Physical Science	Describe the role of evaporation and condensation in the water cycle.	Knowledge
Physical Science	Describe the role of evaporation and condensation in the water cycle.	Understanding
Physical Science	Describe the role of evaporation and condensation in the water cycle.	Understanding
Physical Science	Explain the gravitational force using different examples.	Knowledge
Physical Science	Explain the gravitational force using different examples.	Understanding
Physical Science	Explain the gravitational force using different examples.	Analyzing
Earth and Solar System	Describe the solar system and its planetary arrangement showing position of Earth in our solar system.	Understanding
Earth and Solar System	Differentiate between a star and a planet.	Knowledge
Earth and Solar System	Describe the solar system and its planetary arrangement showing position of Earth in our solar system.	Understanding

For example, students showed low performance at Knowledge, Understanding and Analysing level of cognition on the SLO “Explain the gravitational force using different examples.” It means teacher should pay much more attention on this SLO while teaching the relevant concept. Students need clarity on this concept.

MATHEMATICS GRADE 5

SUMMARY OF WEAK SLOs MATHEMATICS GRADE-5

Area	Sub contents	SLO Statement	Cognitive level
Arithmetic	Number	Divide numbers, up to 6 digits, by 2 digits and 3 digits numbers	Understanding
Arithmetic	Number	Carryout combined operations using BODMAS rule.	Understanding
Arithmetic	Number	Verify distributive laws.(Multiplication and Division)	Applying
Arithmetic	HCF AND LCM	Solve real life problems involving HCF&LCM	Understanding
Arithmetic	HCF AND LCM	Find LCM of four numbers, up to 2 digits, using division method	Understanding
Arithmetic	Unitary Method	Solve real life problems involving direct and inverse proportion (by unitary method).roof	Applying
Arithmetic	Unitary Method	Calculate the value of many objects of the same kind when the value of one of these objects is given.	Applying
Perimeter & area	Perimeter & area	Solve appropriate problems of perimeter and area	Applying
Geometry	Geometry	Use protractor and straightedge/ruler to construct equilateral, isosceles and scalene triangles when two angles and included side are given.	Applying
Geometry	Geometry	Measures the lengths of the remaining two sides and one angle of the triangle.	Applying
Information handling	Information handling	Solve real life problems involving average.	Applying
		Draw block graphs or column graphs.	Applying

ENGLISH GRADE 5

SUMMARY OF WEAK SLOs ENGLISH GRADE-5

Area	Sub Content Strand	SLOs Statement	Cognitive Level
Writing Skills + Reading and Thinking Skills	Paragraph Writing	*Write a guided paragraph using ideas gathered and organized through various strategies.	Applying
	Letter Writing	Write a reply to a short informal letter from friends and family members.	Applying
	Story Writing	Write a guided story using the elements of story writing.	Synthesis
	Comprehension Passage(prose)	Apply strategies to comprehend questions for appropriate response by marking key words, verbs and tenses in a variety of the following question types.	Synthesis
	Comprehension Passage(prose)		Synthesis
	Sentence Making	*Write sentences of their own using correct capitalization, punctuation and spellings.	Applying

URDU GRADE 5

SUMMARY OF WEAK SLOs URDU GRADE-5

Area	Content Area	SLO Statement	Cognitive Level
writing	لکھنا	درخواست لکھنے کے اصولوں کے مطابق اجزا درج کر سکے۔ واقعہ یا ماحول کا مشاہدہ کر کے چند سطری عبارت لکھ سکے	Applying
Life Skills	زندگی کی مہارتیں	دوستوں کو خط، دعوت نامے اور تہنیتی کارڈ تحریر کر سکے۔	Applying
writing	لکھنا	شعر، نظم پڑھ کر نثر میں ایک دو سطور میں تحریر کر سکے۔	Understanding
writing	لکھنا	تصویروں اور اشاروں کی مدد سے کہانی مکمل کر سکے۔	Understanding
Creative Writing	تخلیقی لکھائی	عنوان، مشاہدے کا تجزیہ، ترتیب اور پیشکش، اختتامیہ وغیرہ سے آگاہ ہو سکے	Synthesis

COVID-19 has changed the world. It has changed Pakistan and it has changed Punjab. And for those of us at the School Education Department, it has changed the education landscape via the threat of learning losses. These are exceptional circumstances and they required us to investigate the nature of the problem to assist us in producing adequate solutions.

Punjab Examination Commission (PEC) conducted an evidence-based assessment in six (6) districts of the Punjab with Grade 5 students, in order to understand the degree of losses occurring in different domains of learning.

This was one of many initial steps in what will be ongoing efforts to deeply investigate the most complex educational challenge that our province has faced in its storied history. Our findings will be consequential for academic planners, management, and teachers. We will continue to realign academic activities; especially in domains where losses occurred, enabling students to make up those losses.

This situation calls for bold decision-making. I thank you all for your support through these challenging times and am optimistic we will navigate these waters as we always have: With resolve and determination.

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