



REDMARKER
SYSTEMS

E-Marking

Using latest technology to
revolutionize assessment value chain

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ACKNOWLEDGEMENTS

We would like to express our sincere gratitude to Mr. Shahram Khan Tarakai, Minister for Elementary and Secondary Education Department, Government of Khyber Pakhtunkhwa who is determined to enable the existing education system to meet future challenges, and his forward-looking approach spurred the Board of Intermediate and Secondary Education (BISE) Peshawar to take lead in this digital initiative of Online Onscreen Marking. We would take this opportunity to express our appreciation for Mr. Muhammad Yahya Akhunzada, Secretary Elementary and Secondary Education Department, Government of Khyber Pakhtunkhwa, for his vision to transform education through digitalization.

We would also like to acknowledge and show our sincere gratitude to Mr. Prof. Nasrullah Khan Yousafzai, Chairman Board of Intermediate and Secondary Education, Peshawar, for extending his support and guidance as well as his ongoing support for future assignments. We are grateful to Mr. Arif Ali Khan, Controller Examinations, and Mr. Hayat Mohammad, Focal Person, Board of Intermediate and Secondary Education, Peshawar, for facilitating Red Marker Systems' team to successfully execute all project activities. We are grateful to, Mr. Attiq Hassan Shah, Director Operations, Umar Bin Tahir, Business Development Manager, Ms. Sanam Jalal, Project Director, Red Marker Systems Pvt Ltd, and all team, to have helped in compiling this report as well as to carrying out all activities with dedication, professionalism, and enthusiasm which lead to the success of this project.



Gull Zeba Jawad

Founder & CEO Red Marker Systems

“

We believe that we can achieve the goal of quality education for all very soon, with the help and support of the government, if we dedicate ourselves to reforming our assessments and making it our priority.

”

We have been working in the assessment sector of Pakistan for the past several years. We have worked tirelessly for the introduction of ICT in the assessment sector to optimize existing processes to further enhance quality and efficiency, and we have seen exceptional results so far. We have been able to build in-house technology-based solutions that have the potential to revolutionize the assessment sector, which is critical in improving the overall quality of education in Pakistan; it already has generated an overwhelming response. We aim to digitalize the entire value chain of the assessment sector by providing state-of-the-art digital solutions.

In our current assessment sector, the focus of most educational reforms is towards classroom learning, teachers' training programs, and/or learning materials. All these reforms must stem from assessments by providing the necessary inputs related to students' and teachers' performance. Since our current assessments are carried out manually, we do not get the required data, hence the educational reforms may not be as effective. Our solutions are designed to bridge this gap by digitalizing the entire process and provide the data points that can play a pivotal role in policymaking and developing effective educational reforms. We have taken the lead in this process by digitalizing the assessment sector as we are the first private company to electronically mark descriptive papers of Board of Intermediate and Secondary Education, Peshawar.

We believe that we can achieve the goal of quality education for all very soon, with the help and support of the government, if we dedicate ourselves to reforming our assessments and making it our priority. We aim to transform our assessments so that we produce high-order learners that contribute positively to our society and can compete in the global arena as well.



Arif Ali Khan
Controller Examinations
BISE-Peshawar

“ Being an educational professional, I find myself extremely fortunate to be witnessing and also be a part of the start of a shift to a new paradigm in Pakistan’s educational sector in the form of Online-Onscreen marking.

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Being an educational professional, I find myself extremely fortunate to be witnessing and also be a part of the start of a shift to a new paradigm in Pakistan’s educational sector in the form of Online-Onscreen marking. Furthermore, I would like to congratulate Red Markers Systems’ team for developing a technology-based indigenous solution that single handedly solves multiple problems. I firmly believe that moving to Online-Onscreen marking is the logical future as high-speed internet connectivity is on the rise. Such systems are not only less costly to operate but also reduce the impact of marker biases on student results. I also believe that moving towards Online-Onscreen marking of exams will improve accuracy, reliability, and transparency of our results. This is aligned with our National vision of Digital Pakistan and the services we aim to provide to our students and this nation. This intervention, I am sure, will lead us to the attainment of the goal of Quality Education.



Mr. Mehdi Jan

Secretary, BISE Peshawar

It gives me immense pleasure to congratulate Red Marker Systems' team to have successfully completed the pilot project of Online-Onscreen marking of descriptive answer scripts for classes 11 and 12 for subjects English and Computer Science during the special examinations. At BISE Peshawar we always strive to enhance our services to facilitate our key stakeholders i.e. students and their parents. We have been working relentlessly to improve the quality of examinations held under the umbrella of BISE Peshawar as well as our affiliated institutions to maximize student

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It is extremely encouraging to see that Red Marker Systems; a local organization came up with an indigenous solution that addresses multiple pain points of our paper checking value chain and has immense room for further scalability.

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potential. We have already utilized new technologies on our website to facilitate students in granting them quick access to their roll number slips, results, DMCs, registration, model papers, and related information. We strongly believe that our next step towards enhancing the quality of our assessments is moving towards Online-Onscreen marking of exams to improve transparency, reliability, and accuracy of our results which is aligned with our vision and the services we aim to provide to our students and this nation.

“

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”

I take this opportunity to praise the team at Red Marker Systems who were successful in implementing the Online-Onscreen marking pilot project that is in line with the government's vision of Digital Pakistan. It also gives me immense pleasure to see this project coming to fruition according to BISE, Peshawar objectives. It is extremely encouraging to see that Red Marker Systems; a local organization came up with an indigenous solution that addresses multiple pain points of our paper checking value chain and has immense room for further scalability. Our country is in dire need of accelerating the



Prof. Nasrullah Khan Yousafzai

Chairman, BISE Peshawar

long-awaited digital transformation and projects like these should be adopted widely as they are a step in the right direction for our educational sector.

EXECUTIVE SUMMARY



Red Marker Systems Pvt Ltd (RMS) have been working tirelessly to introduce Online-Onscreen marking solution for objective as well as descriptive answer scripts. Board of Intermediate and Secondary Education, Peshawar has progressive approach in this regard. For the product validation and moving towards Online-Onscreen marking of descriptive exams, both parties signed a Letter of Understanding on 10th September 2020, to electronically mark the special exam (October 2020) in which Multiple Choice Questions as well as descriptive answer scripts of four subjects (English I & II, and Computer Science I & II) for grade XI and XII were marked by trained e-markers, using RMS's flagship web-based solution "rMarker". During this exercise, a total number of 25,495 descriptive questions and 46,165 Multiple Choice Questions were marked Online-Onscreen, first time in BISE-Peshawar. A total of 47 e-markers were engaged to carry out this assignment.

Focused trainings were held for BISE-Peshawar staff as well as e-markers to get acquainted with rMarker and utilize all available tools to their full potential. One of the key features of rMarker is rubric based marking, which ensures that markers grade students' work based on the marking scheme for each section of an answer rather than an overall score based on their personal intuition. All data collected through this exercise against each item was analyzed to determine key findings and highlighted strengths and weaknesses of students in a particular area. This guaranteed quality, uniformity, transparency, and standardization of marking across the board. It

also generated annotated data, which was further analyzed, and the findings can be utilized for policy making and goals setting such as focused teachers' training programs, improving item development etc.

rMarker has the ability to check for e-markers' performance before (pre-emarking standardization) and during any assignment (live monitoring). This is carried out by checking the aggregate marking difference of all active e-markers with that of a senior e-marker. This allows for live monitoring of e-markers as well as greatly improves the quality of marking. A detailed report for e-markers' performance was also generated as a part of this pilot project. This feature can further be utilized to determine e-markers' rankings in the future.

Moving to an Online-Onscreen marking solution can come with its own challenges and benefits. It is recommended that this transition should be a phase-wise approach rather than one-time. While optimizing and automating the value chain of assessments can save the Education Boards millions of rupees, improve its brand image, transparency, security, and enhance stakeholder satisfaction, maximize time efficiency, promote uniformity, and standardization, it can also generate dissatisfaction amongst existing employees. This can be lessened by easily building capacity of teachers, students, and staff through various mediums. This transition is inevitable in the current scenario and overall trends in the education sector across the globe as well as aligned with the government's commitment for Digital Pakistan.

PREAMBLE

Examination/Assessment plays a pivotal role in teaching-learning process and it is an effective tool for determining student achievements and facilitating societal progress. Assessment is an integral part of teaching and learning process that not only judge student performance throughout and at the end of an academic cycle, but also gauges upon how their learning improves as they go through various processes of learning actively in, and outside the class rooms. Assessment, therefore, is not only of learning but for learning.

In this regard, National Education Policy document highlights weaknesses in teacher training, quality, management, and accountability and links its causation with an outdated secondary education examination system, particularly for grades 9–12 where board examinations are mandatory for all students. These include (i) an emphasis on lower-order learning that focuses on rote memorization rather than critical thinking; (ii) poor test preparation, including frequent repetition of examination items across years and uneven coverage of the curriculum; (iii) weak capacity of examination writers and markers, which is exacerbated by the lack

of university training programs in these subject areas etc.

Some of these weaknesses listed above, can be mitigated through introducing technology to enhance the existing examination and assessment processes. Education bodies all around the world are quickly adapting innovative ideas, fulfilled with latest technologies, to uplift education as a whole and revolutionizing education in their contexts. These technologies have the potential to greatly improve quality in educational assessments that are beneficial for teachers and effective for students' learnings. In this fast-changing landscape of education across the globe, it is inevitable for us that we embrace advancements and utilize them to their full potential. With the right intent and political will, BISE Peshawar can also transform its very own assessment system that focuses and produces high order learners rather than low order learners, all the while improving efficiency, transparency, quality, and capacity building.

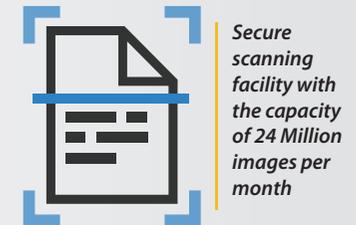
**Technologies
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INTRODUCTION TO RED MARKER SYSTEMS

Red Marker Systems (Pvt) Ltd was founded for the sole purpose of providing advanced digital solutions to overcome the existing caveats of our century-old education system. Since its inception, we have meticulously developed solutions in-house, based on years of on-ground experience of our team and compliments outcomes of various focused group discussions with key stakeholders. Our solutions are specifically designed to optimize and digitize the complete value chain of examination/assessment systems by introducing alternate digital services that most of our current and potential clients desire.

The prevalent manual assessment system in Pakistan is costly, error-prone, easily manipulated, and lacks quality and monitoring checks to ensure transparency. We are providing a digitalized alternative to revamp the entire traditional marking system to overcome major shortcomings, that will instill trust, improve cost-effectiveness, substantially decrease processing times, and add value for clients such as annotated data for complex micro-level analytical reports useful for policymaking and goal setting. Our solutions have the potential to stimulate the digital transformation of our education system, which is a dire need in the current scenario, in-line with overall Digital Pakistan vision of the government.

RED MARKER SYSTEMS AT A GLANCE



Technology Partner



OUR SOLUTIONS



rMarker

It is an Online-Onscreen marking solution of descriptive answer scripts that allows e-markers to efficiently carry out assessments of various forms of questions such as Essay Type Questions (ETQs), Short Response Questions (SRQs), and Constructive Response Questions (CRQs).

rMarker has been specifically designed to be transparent with features such as automatic masking which also minimizes any malpractices. It is an economical and better solution to traditional marking as it provides a 24x7 marking facility and automated data entry. It also generates automated results which eradicates any possibility of human error. It provides real-time and accurate micro-level data to clients that they can utilize in policy formulation and goal setting. All the records of assessed booklets and e-marking assignment statuses are automatically updated on rMarker's dashboard which can be accessed and assessed by the client. rMarker generates result cards and several analytical reports as per client requirements on a single click.



DID YOU KNOW?

rMarker has already electronically marked more than 200,000 descriptive items

rTestGen

RMS is the first company in Pakistan to introduce a unique solution that enables our clients to create, modify, validate, analyze, and store items in a secure database. rTestGen allows our clients to engage internal and external item writers remotely to diversify their databank while adding all necessary tagging to items essential for intelligent and efficient paper generation.

rTestGen is a comprehensive solution designed specifically to digitize item creation and management in a cost effective and collaborative method. It is uniquely placed to standardize item creation, paper generation as well as the entire assessment sector of Pakistan. It facilitates item creation by providing Item Writers with option to add multiple tagging to each item such as type of item, strand, topic, competency, standard, benchmark, Student Learning Outcome, cognitive levels, as well as difficulty levels. Its easy-to-use writing canvas allows Item Writers to add different types of texts in multiple languages as well as add photos where required. It also provides a hierarchical review and approval method where each item is reviewed by Subject Specialists, Assessment Experts, Technical Translators, Psychometricians, before its testing.

Once an item has been tested, it allows psychometricians to add psychometric properties to each item. All items are securely managed in the client specific database from which any type of paper can be generated based on the selected criterion using single type or a combination of types of items.



DID YOU KNOW?

rTestGen can generate papers from a vast pool of items from different locations simultaneously

rOpt

It as an advanced Optical Mark Reader (OMR) that can mark Multiple Choice Questions (MCQs) without the need to fill out a corresponding traditional bubble sheet. Our solution automatically marks student responses on ordinary exam sheets instead of specific OMR Sheets with extremely high level of accuracy.

rOpt works with an image scanner to scan and process the answer sheets; processed data can be saved into various easy to use formats. We provide our clients with trainings and instruction manuals to easily set up and manage rOpt with one-day training course. By successfully completing this course, key personnel can train our solution on reading a particular format of an answer sheet in few clicks. This training of rOpt is only required once for a particular format of answer sheet and rOpt can read answers with precision for the same format repeatedly. It also has built-in exception handling functions that easily locate and allows the user to correct or verify any erroneously marked forms.



rOpt allows for student responses to be marked on answer script without the need for separate bubble sheet



BISE PESHAWAR

TAKING LEAD IN EDUCATION SECTOR

Ministry of Education Khyber Pakhtunkhwa (KP) is determined to provide quality education enabling all citizens to reach their maximum potential and produce responsible and skilled humans. In order to achieve the mission of the Ministry, Board of Intermediate and Secondary Education (BISE) Peshawar being the Parent Board of KP, is taking lead in adapting modern technologies to facilitate students to save their time by quick access to their roll number slips, results, DMCs, registration, model papers and related information regarding registration/enrolment, affiliation, examination schedule and camp offices from their homes. The Online facilities have given the BISE Peshawar an edge over other Boards of the country.

BISE Peshawar is striving to ensure transparency in the examination system. It also strives to ensure transparency, quality, and speed in the assessment process. BISE Peshawar has joined hands with Red Marker Systems (Pvt). Ltd. and successfully conducted pilot project of Online-Onscreen Marking.

With the successful implementation of this project, BISE Peshawar has become the first Board of Pakistan to electronically mark four descriptive exams of intermediate in one session i.e. fall 2020 special exam. Details of the subjects and students are delineated in the section 'Project implementation'.

Impetus behind this project was to assess the applicability of digital alternative of traditional marking and to improve the existing system of marking while adding value to the current processes with the use of technology. By introducing e-marking of descriptive responses we can ensure

- definite implementation of rubric marking,
- ensure high quality assessments in limited time frame,
- build capacity of markers,
- improve transparency in the system,
- provision of annotated data for complex micro-level analytical reports.

ONLINE ONSCREEN MARKING WORKSHOP



Red Marker Systems conducted Online-Onscreen Marking, hands-on workshop for public sector teachers of KP, nominated by BISE Peshawar

PROJECT IMPLEMENTATION PROCESS

01

ANSWER SCRIPT AND QUESTION PAPER DESIGNING

In collaboration with BISE-Peshawar, RMS designed an appropriate digital answer script that satisfied requirements of both BISE-Peshawar as well as RMS's rMarker. Question paper was also redesigned in order for it to be aligned with the newly designed answer script.

02

DESIGNING OF RUBRIC

RMS held a detailed meeting with subject specialists that set the exam paper to formulate Rubric for the allocated subject/ exam papers. These rubrics were later used to ensure e-markers correctly mark students' responses.

03

INVIGILATION STAFF TRAINING

It is extremely important for the invigilation staff to be accustomed with the new answer script as they will eventually guide students to fill out all the required details properly. For this purpose trainings were imparted by BISE-Peshawar to ensure all invigilating staff had understanding of the new answer scripts prior to the exam conduct.

04

E-MARKER TRAININGS

With the introduction of rMarker as a tool to mark students' responses online and onscreen, teachers were trained to efficiently mark answer scripts. This training was held at BISE-Peshawar where selected teachers were given hands-on training and experience of using rMarker.

05

EXAMS CONDUCT AND STUDENT TRAINING

For each exam conducted within the scope of this pilot study, 15 minutes were reserved before the commencement of exam for the invigilators to guide students to fill out all the required details properly. This process was extremely important to ensure students' answer scripts were rightly associated with their roll numbers to remove any chances of errors.



DID YOU KNOW?

Answer scripts can be e-marked 24/7 from any location in the world.

06

SORTING, CUTTING & SCANNING OF ANSWER SCRIPTS

Once all answer scripts were received by BISE-Peshawar, a team of experts in sorting, cutting and scanning from RMS were sent to organize this process at a secure location provided by BISE-Peshawar within their premises. Strict controls were set out to ensure secrecy, security and anonymity of students while maintaining efficiency and professionalism.

07

E-MARKING

All e-markers were registered with RMS and were given their unique login details well in advance of marking process to begin. All e-markers began marking exams as instructed by BISE-Peshawar and completed all batches within the time-period specified.

08

RESULT GENERATION

As one of the key features of rMarker, all results are compiled in real-time and can be retrieved at any given time to generate result. These results can be of a particular student, class wise, examination center wise, subject wise, school wise, geographical location wise etc.

09

COMPLEX DATA ANALYSIS

Student responses marked on rMarker can be deciphered into many different ways and analyzed. For questions that require rubric based marking, e-markers are compelled to grade students' responses according to the pre-defined rubric, set at the time of question paper making. This allows rMarker to capture data based on rubric, sub-rubrics, annotations, feedback etc. which otherwise is not captured in manual marking. This data is then represented in a structured form for further macro/ micro level data analysis essential for policy making.



DID YOU KNOW?

Teachers' performance can be mapped and rMarker can generate markers' ranking



DATASET BRIEF OVERVIEW

CLASSES

BISE Peshawar Special Supplementary examination was conducted across KPK. Red Markers Systems E-marked MCQ's and CRQ's papers for Grade 11 and Grade 12. The breakup of these papers based on subjects, classes and question type is in the following tables.

Subject	Grade	Objective Papers	Subjective Papers
English	XI	1021	1021
English	XII	1202	1202
Computer Science	XI	38	38
Computer Science	XII	77	77

Q.1 EXPLAIN WITH REFERENCE TO THE CONTEXT, THE GIVEN STANZA:

I'll write on the wall with reds,
whites and blues And I'll bounce on the furniture
wearing my shoes,
I'll drink from the carton and then leave it out,
I'll stuff all the toilets and oh, how they'll shout.

OR

But instead of placing the flower in my hand,
He held it mid-air without reason or plan.
It was then that I noticed for the first time,
That weed-toting boy could not see; he was
blind

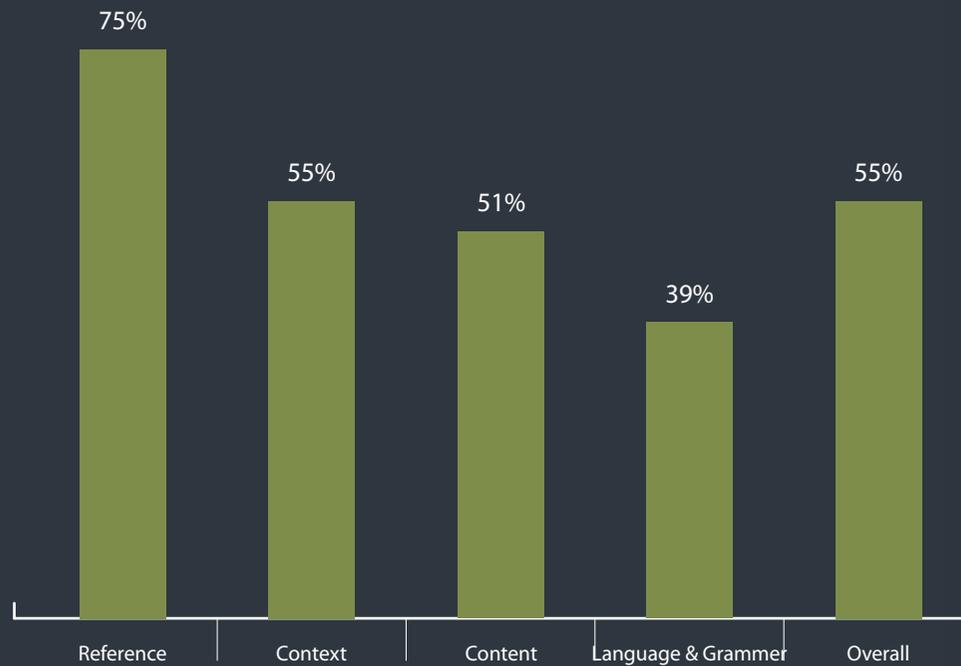
Q.No. 1		Total Marks:05	
		Marking Scheme	
Marks (01)		Correct	Incorrect
Reference		Correct Reference	Incorrect Reference
Marks (01)		Correct	Incorrect
Context		Relevant Context	Irrelevant Context
Marks (02)	Correct	Partially Correct	Incorrect
Content	Content is Relevantly Correct	Content is Partially Relevant	Content Totally Irrelevant
Marks (01)		Correct	Incorrect
Language & Grammar		Less than 3 Spelling and/or Grammar Mistakes	03 or more Spelling and/or Grammar Mistake

Grade XI-Q1. Aggregate Percentage Score Rubric Wise

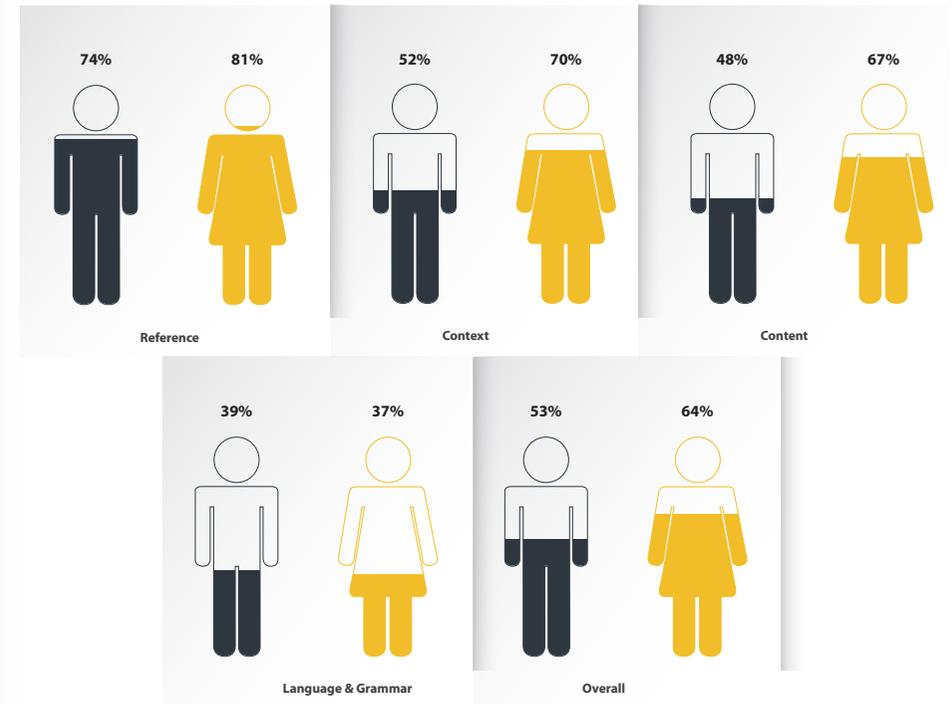


KEY FINDING:

Students lack in language and grammar with lowest average scores for both genders to be at 39%.



Grade XI-Q1. Aggregate Percentage Score Gender Wise



SUGGESTIONS:

- Student's referencing scores depict that they have the skills to reference a stanza appropriately. Although teachers' need to focus greatly on building capacity of students with regards to language and grammar.
- While designing Teachers' training programs, more stress should be placed upon enhancing language and grammar in classroom learning.

Q.2 PARAPHRASE THE FOLLOWING STANZA:

If you can't be a pine on top of the hill,
Be a scrub in the valley – but be
The best little scrub at the
side of the rill, Be a bush if you can't be a tree

OR

Coal-fired chimneys reaching up so high,
Even though the solar power's free,
You'd think we'd learn as time goes speeding by.

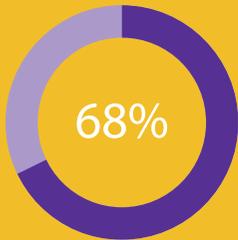
Q.No. 2			Total Marks:05	
			Marking Scheme	
Marks (01)			Correct	Incorrect
Paraphrasing			Relevant Paraphrasing	Irrelevant Paraphrasing
Marks (03)	Correct	Mostly Correct	Partially Correct	Incorrect
Prose Conversion	Correct	Mostly Correct	Partially Correct	Incorrect
Marks (01)			Correct	Incorrect
Language & Grammer			Less than 3 spelling and/or grammer mistakes	3 or more spelling and/or grammer mistakes

Grade XI-Q2. Aggregate Percentage Score Rubric Wise

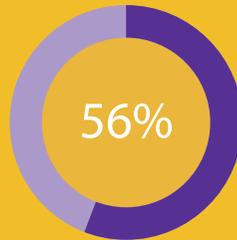


KEY FINDING:

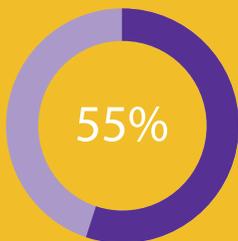
Students have performed better in paraphrasing compared to prose conversion and language & grammar, although students have scored low in prose conversion and language & grammar.



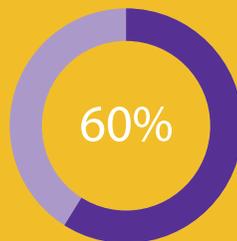
Paraphrasing



Prose Conversion



Language & Grammar



Overall

Grade XI-Q2. Aggregate Percentage Score Gender Wise



SUGGESTIONS:

- During teaching paraphrasing in classrooms, more focus should be placed on prose conversion as well as enhancing language and grammar of students.

Q.3-13 SHORT QUESTIONS.

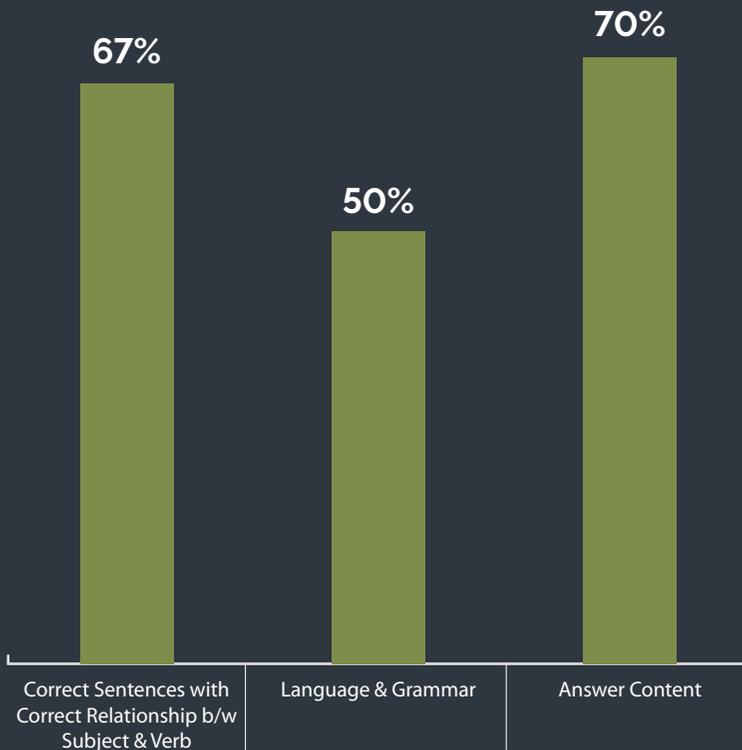
Q.No. 3			Total Marks:05 Marking Scheme	
Marks (03)	Correct	Mostly Correct	Partially Correct	Incorrect
Content	Writing fully correct and relevant content	(02 mistakes)	(03 mistakes)	
				Incorrect/irrelevant information
		Missing or incorrect mentioning any 02	Missing or incorrect Information	
Marks (01)			Correct	Incorrect
Correct Sentences with Correct relationship b/w subject & verb			Less than 3 Mistakes	03 or more mistakes
Marks (01)			Correct	Incorrect
Grammar & Spelling			Less than 3 Spelling and/or grammer mistakes	03 or more spelling and/or grammer mistakes

Grade XI-Q3-13. Short questions Aggregate Percentage Score Rubric Wise



KEY FINDING:

Students have performed much better in language & grammar where writing short sentences is required in comparison to writing long sentence structures. "Answer content" refers to memory or knowledge acquisition of students and students have performed better. This can also mean that students are able to write better sentences that they have memorized rather than creating new sentences. (This statement is correct in context of Q#1)



Grade XI-Q3-13. Short questions Aggregate Percentage Score Gender wise



SUGGESTIONS:

- Focus should be on creative writing through writing exercises in classrooms to build capacity of students on logical sequencing of sentences.

Q.14 (a) TRANSLATE THE FOLLOWING INTO URDU.

- (i) Then a monstrous terror seized him and his heart stood still. (ii) Nearly all his favorite sports are played outdoors.
(iii) I was about to learn one of the most painful lessons of my life. (iv) The day set for the death sentence drew near.
(v) It was the last night they would have together.

(b) TRANSLATE INTO ENGLISH.

- (1) کیا میں آپکی مدد کر سکتا ہو؟ (2) ہتھیلی پر سرسوں نہیں جمتی۔
(3) سورج مشرق سے طلوع ہوتا ہے۔ (4) وہ پچھلے تین دنوں سے بخار میں مبتلا ہے
(5) دھوبی کا کتا نہ گھر کا۔

Q.No. 14 (Part a&b)

Total Marks:05

Marking Scheme

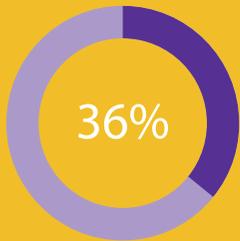
Criteria	Correct	Incorrect
Question 14 (a & b) i	Correct Translation	Incorrect Translation
Question 14 (a & b) ii	Correct Translation	Incorrect Translation
Question 14 (a & b) iii	Correct Translation	Incorrect Translation
Question 14 (a & b) iv	Correct Translation	Incorrect Translation
Question 14 (a & b) v	Correct Translation	Incorrect Translation

Grade XI-Q14 (a & b). Aggregate Percentage Score Rubric Wise

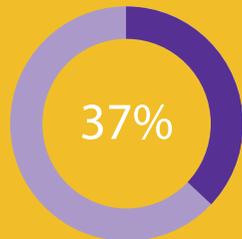


KEY FINDING:

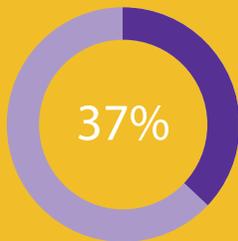
Students lack in basic translation from Urdu to English and vice versa. Girls have performed considerably better compared to boys.



Urdu to English



English to Urdu



Overall

Grade XI-Q14 (a & b). Aggregate Percentage Score Gender Wise



SUGGESTIONS:

- Teachers should focus on classroom-based exercises on translation from Urdu to English and vice versa.

Q.15 (a) CHANGE THE VOICE OF THE FOLLOWING:

- (i) I do not like lizards.
- (ii) She is preparing breakfast.
- (iii) A trip to Murree had been planned by us.
- (iv) I have invited her.
- (v) Write a letter to your brother

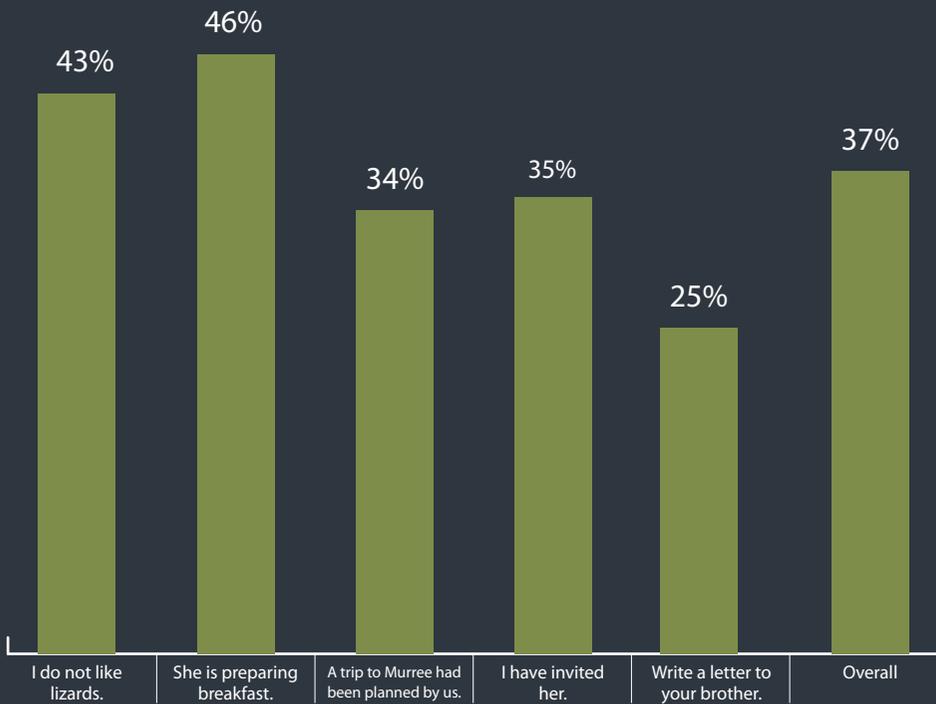
Q.No. 15 (Part a)		Total Marks:05
Marking Scheme		
Criteria	Correct	Incorrect
Question 15 (a) i	Lizards are not liked by me.	Incorrect Answer
Question 15 (a) ii	Breakfast is being prepared by her.	Incorrect Answer
Question 15 (a) iii	We had planned a trip to Murree.	Incorrect Answer
Question 15 (a) iv	She has been invited by me.	Incorrect Answer
Question 15 (a) v	Let a letter be written by your brother.	Incorrect Answer

Grade XI-Q15 (a). Aggregate Percentage Score Rubric Wise



KEY FINDING:

Results show that students have performed low in changing voice which also endorses earlier key findings that when students lack in language & grammar, the overall scores are also compromised.



Grade XI-Q15 (a). Aggregate Percentage Score Gender wise



SUGGESTIONS:

- Capacity building programs should be more focused for male teachers especially on language & grammar.

Q.15 (b) FILL IN THE BLANKS WITH PROPER PREPOSITIONS

- (i) I look forward.....seeing her again.
- (ii) Help! The house is.....fire.
- (iii) The slot machine is..... order.
- (iv) The senator is opposed.....this new bill.
- (v) She is angry.....me for not helping her.

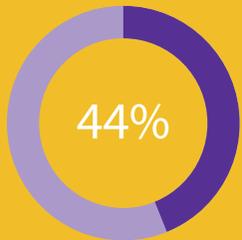
Q.No. 15 (Part b)		Total Marks:05
Marking Scheme		
Criteria	Correct	Incorrect
Question 15 (b) i	to	Incorrect Answer
Question 15 (b) ii	on	Incorrect Answer
Question 15 (b) iii	out of	Incorrect Answer
Question 15 (b) iv	to	Incorrect Answer
Question 15 (b) v	with	Incorrect Answer

Grade XI-Q15 (b). Aggregate Percentage Score
Rubric Wise

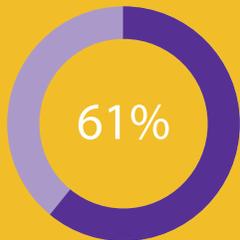


KEY FINDING:

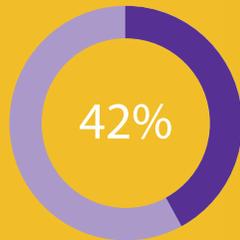
Since propositions are tested to check the learning of students with respect to English language, results show that overall average score is below 50%. This highlights the lack of understanding of students when using appropriate propositions in a sentence.



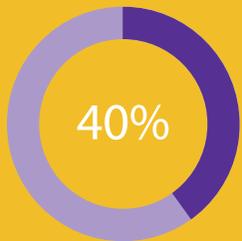
(i) I look forward.....seeing her again.



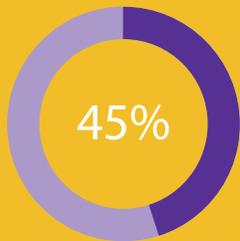
(ii) Help! The house is.....fire.



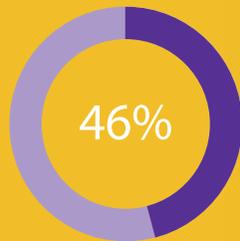
(iii) The slot machine is..... order.



(iv) The senator is opposed.....this new bill.

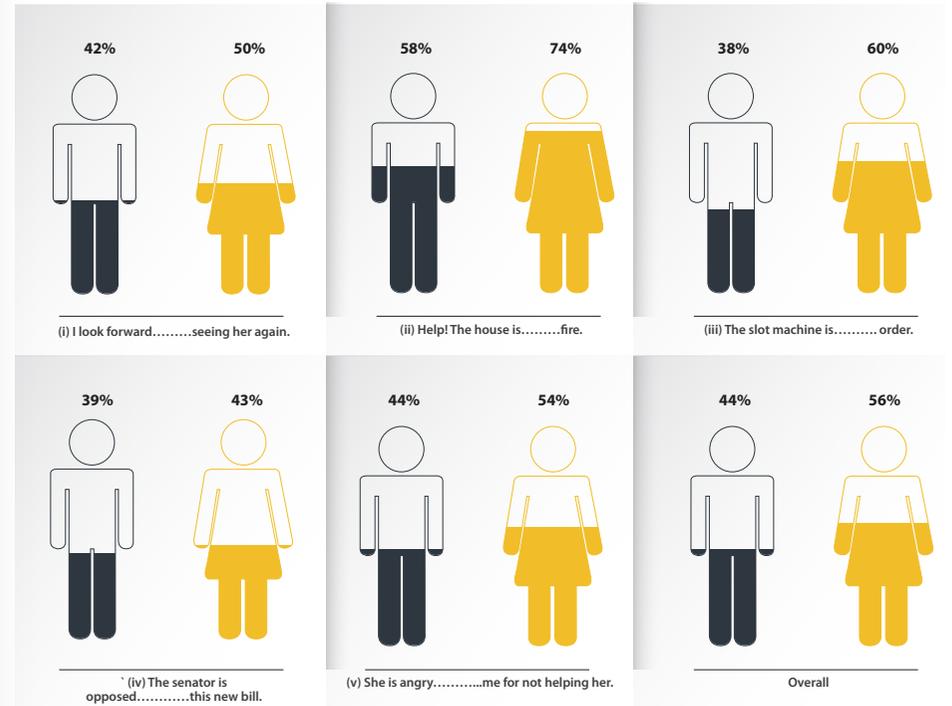


(v) She is angry.....me for not helping her.



Overall

Grade XI-Q15 (b). Aggregate Percentage Score
Gender Wise



SUGGESTIONS:

- Teachers' training programs must focus on English as a language rather than a subject.

Q.16

- (a) Write the summary of the lesson "The blanket."
 (b) Draw the character sketch of "Demon."

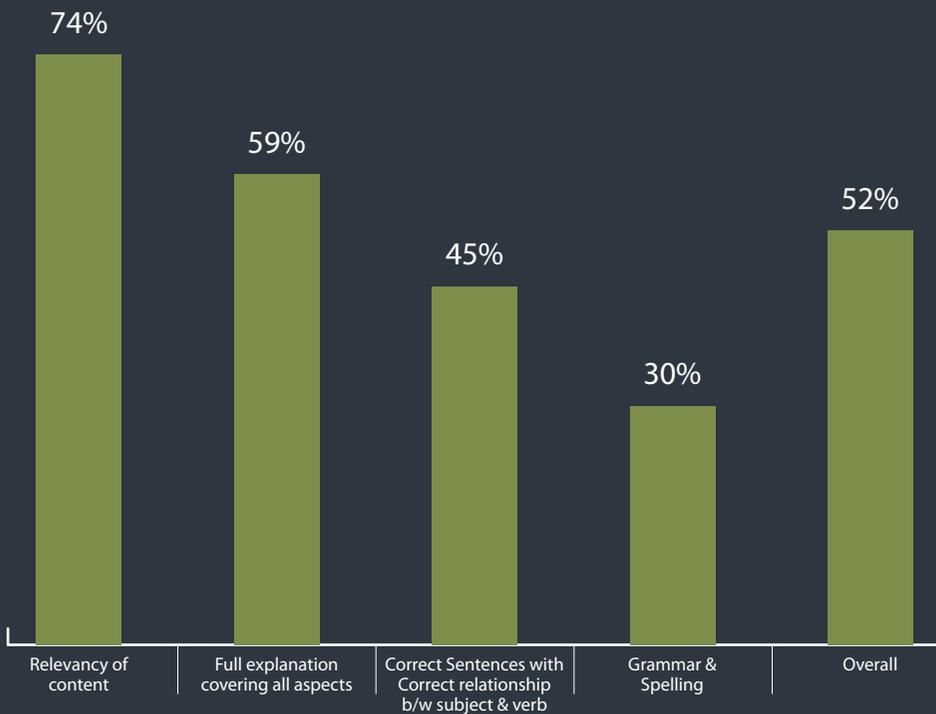
Q.No. 16 (a & b)		Total Marks:05 Marking Scheme	
Marks (1.5)	Correct	Mostly Correct	Incorrect
Relevancy of content	Correct	Mostly Correct	Incorrect/irrelevant information
Marks (1.5)	Correct	Mostly Correct	Incorrect
Full Explanation Covering all aspects	Correct	Mostly Correct	Incorrect/irrelevant information
Marks (01)		Correct	Incorrect
Correct Sentences with Correct relationship b/w subject & verb		Less than 3 mistakes	03 or more mistakes
Marks (01)		Correct	Incorrect
Grammar & Spelling		Less than 3 spelling and/or grammar mistakes	03 or more spelling and/or grammar mistakes

Grade XI-Q16 (a & b) Aggregate Percentage Score Rubric Wise



KEY FINDING:

Students have scored 30% and mostly have made 3 or more than 3 grammar or spelling mistakes which should be a cause of concern. Similarly, students have scored less than 46% in rubric number 3 which shows that most students are unable to show correct relationship between subject and verb.



Grade XI-Q16 (a & b) Aggregate Percentage Score Gender Wise



SUGGESTIONS:

- Teachers should focus on improving lexical aspect of language of students by focusing on proper use of nouns, pronouns, adverbs, verbs, tenses etc.

Q.17 WRITE A LETTER OF CONDOLENCE TO YOUR FRIEND ON THE DEATH OF HIS/HER MOTHER.

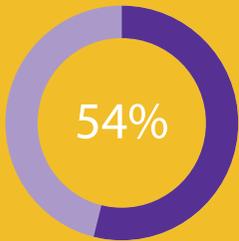
Q.No. 17			Total Marks:10 Marking Scheme		
Marks (2)			Correct	Partially Correct	Incorrect
Head			Written any 3 of following: 1. recipient 2. subject 3. Salutation	Written any 2 of following: 1. recipient 2. subject 3. Salutation	Incorrect/Irrelevant Information
Marks (5)	Correct	Mostly Correct		Partially Correct	Incorrect
Body	Written all 3 of following points: 1. Introduction 2. Explanation 3. Solution or Conclusion	Written any 1 of 3 following: 1. Introduction 2. Explanation 3. Solution or Conclusion		Written any 1 of following: 1. recipient 2. subject 3. Salutation	Incorrect/irrelevant information
Marks (01)				Correct	Incorrect
Tail				Written Sender Address correctly	Incorrect/irrelevant information
Marks (02)			Correct		Incorrect
Grammar & Spelling			Less than 4 spelling and/or grammar mistakes		More than 4 spelling and/or grammar mistakes

Grade XI-Q17. Aggregate Percentage Score
Gender Wise

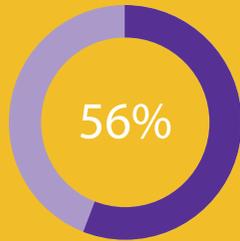


KEY FINDING:

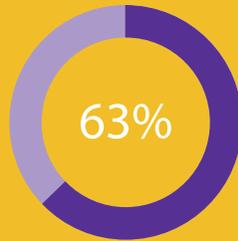
As with other types of questions, most students have made more than 4 mistakes in letter grammar and spelling resulting in zero scores for the said category. This shows that students make more grammatical mistakes where they have to structure long sentences.



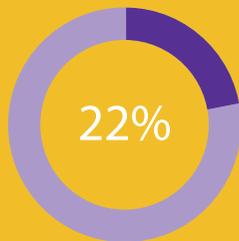
Letter-Head



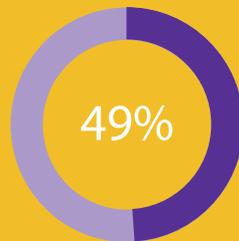
Letter-Body



Letter Tail



Letter-Grammar



Overall

Grade XI-Q17. Aggregate Percentage Score
Rubric Wise



SUGGESTIONS:

- Teachers need to focus on improving semantics, adverbial modification of sentences, and argument structure of students to improve overall performance.

Q.1 EXPLAIN WITH REFERENCE TO THE CONTEXT, THE GIVEN STANZA:

Explain with reference to the context, the given stanza But just buckle right in with a bit of a grin, Just take off your coat and go to it; Just start to sing as you tackle the thing That "cannot be done", and you'll do it.

OR

Then all save one of the little blades Began eagerly to relate impatiently narrate the merits of their lives. This one stayed a small way behind, Ashamed

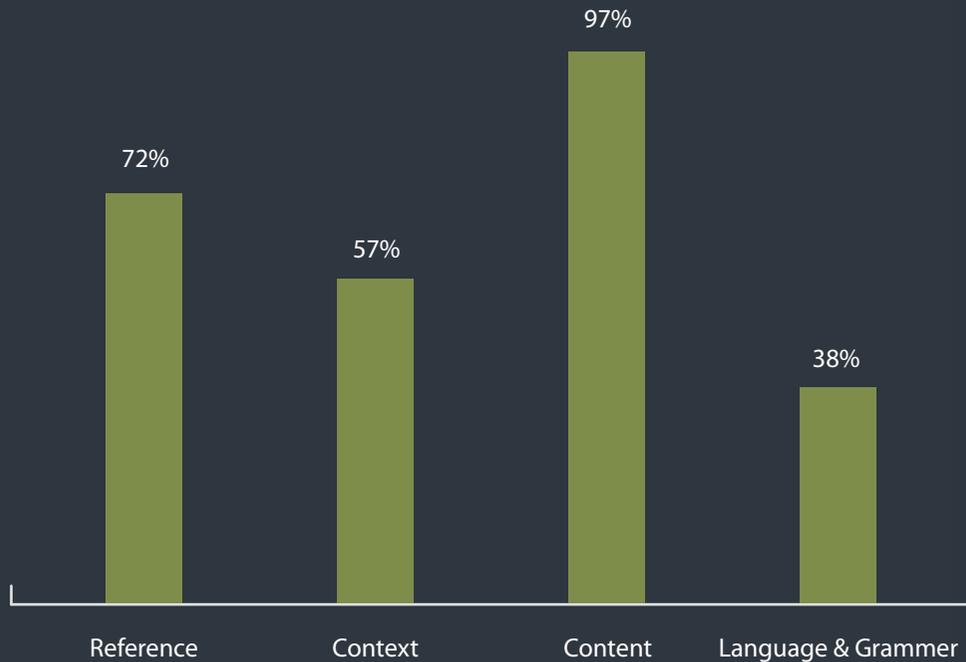
Q.No. 1		Total Marks:05	
		Marking Scheme	
Marks (01)		Correct	Incorrect
Reference		Correct Reference	Incorrect Reference
Marks (01)		Correct	Incorrect
Context		Relevant Context	Irrelevant Context
Marks (02)	Correct	Partially Correct	Incorrect
Content	Content is Relevantly Correct	Content is Partially Relevant	Content Totally Irrelevant
Marks (01)		Correct	Incorrect
Language & Grammar		Less than 3 Spelling and/or Grammer Mistakes	03 or more Spelling and/or Grammer Mistake

Grade XII-Q1. Aggregate Percentage Score Rubric Wise



KEY FINDING:

Students lack in language and grammar with lowest average scores for both genders to be at 38%.



Grade XII-Q1. Aggregate Percentage Score Gender Wise



SUGGESTIONS:

- Student's referencing scores depict that they have the skills to reference a stanza appropriately. Although teachers' need to focus greatly on building capacity of students with regards to language and grammar.
- While designing Teachers' training programs, more stress should be placed upon enhancing language and grammar in classroom learning.

Q.2 PARAPHRASE THE FOLLOWING STANZA:

Paraphrase the following stanza: 'Feel at home!
"come again': They say, and when I come Again
and feel At home, once twice There will be no
thrice. For then I find doors shut on me

OR

I love to rise in a summer morn When the birds
sing on every tree; The distant huntsman winds
his horn, And the sky-lark sings with me. Oh,
what sweet company!

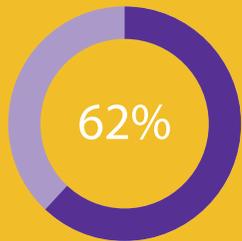
Q.No. 2			Total Marks:05	
			Marking Scheme	
Marks (01)			Correct	Incorrect
Paraphrasing			Relevant Paraphrasing	Irrelevant Paraphrasing
Marks (03)	Correct	Mostly Correct	Partially Correct	Incorrect
Prose Conversion	Correct	Mostly Correct	Partially Correct	Incorrect
Marks (01)			Correct	Incorrect
Language & Grammer			Less than 3 spelling and/or grammer mistakes	3 or more spelling and/or grammer mistakes

Grade XII-Q2. Aggregate Percentage Score Rubric Wise

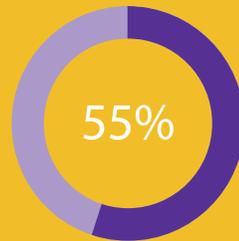


KEY FINDING:

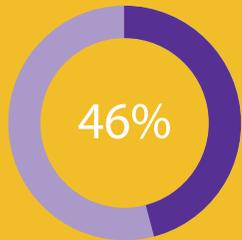
Students have performed better in paraphrasing compared to stanza explanation although students have scored low language & grammar.



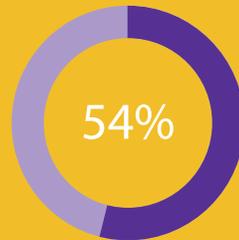
Paraphrasing



Prose Conversion



Language & Grammar



Letter Tail

Grade XII-Q2. Aggregate Percentage Score Gender Wise



SUGGESTIONS:

- During teaching paraphrasing in classrooms, more focus should be placed on enhancing language and grammar of students.

Q.3-13 SHORT QUESTIONS.

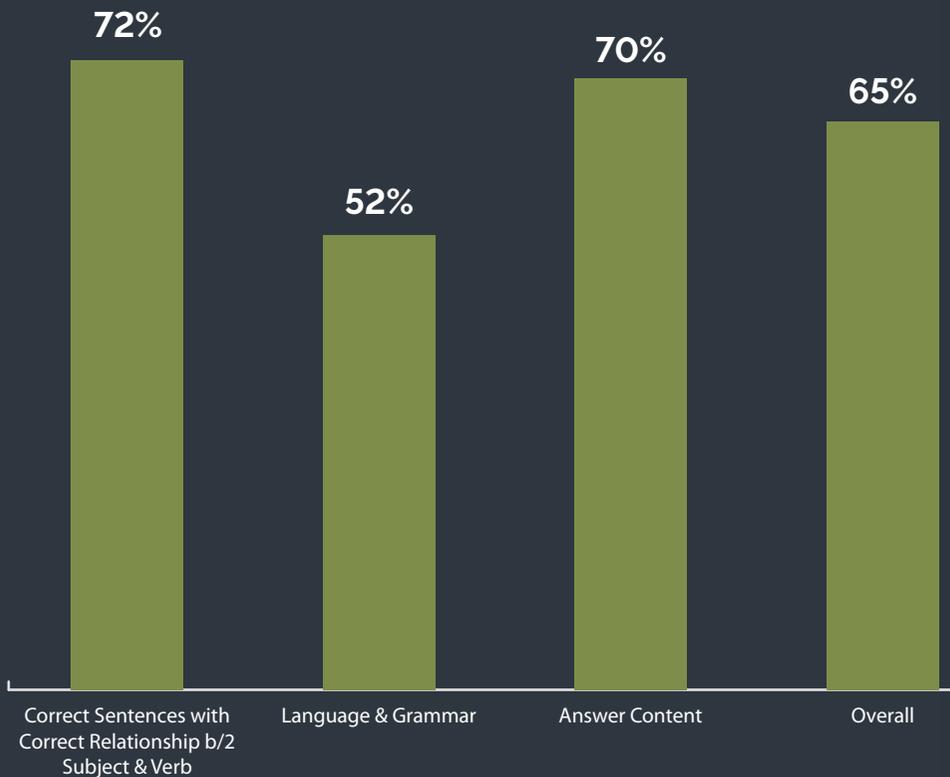
Q.No. 3			Total Marks:05 Marking Scheme	
Marks (03)	Correct	Mostly Correct	Partially Correct	Incorrect
Content	Mentioned all relevant content	Mentioned mostly relevant content	Mentioned partially relevant content	Not mentioned any relevant content
Marks (01)			Correct	Incorrect
Correct Sentences with Correct relationship b/w subject & verb			Less than 3 Mistakes	03 or more mistakes
Marks (01)			Correct	Incorrect
Grammar & Spelling			Less than 3 Spelling and/or grammer mistakes	03 or more spelling and/or grammer mistakes

Grade XII-Q3-13. Short questions Aggregate Percentage Score Rubric Wise



KEY FINDING:

Students perform much better in language & grammar where they are required to write short sentences in comparison to writing long sentence structures. "Answer content" refers to memory or knowledge acquisition of students and students have performed better. This can also mean that students are able to write better sentences that they have memorized rather than creating new sentences.



Grade XII-Q3-13. Short questions Aggregate Percentage Score Gender wise



SUGGESTIONS:

- Focus should be on creative writing through writing exercises in classrooms to build capacity of students on logical sequencing of sentences.

Q.14 WRITE AN ESSAY ON ANY ONE OF THE FOLLOWING.

- i) My favorite book
- ii) Co-education, its merits and demerits
- iii) Science in the service of mankind

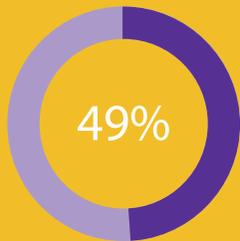
Q.No. 14		Total Marks:10			
Marking Scheme					
Marks (02)			Correct	Partially Correct	Incorrect
Introduction			Introduce topic fully	Introduce topic partially	No introduction at all
Marks (05)	Correct	Mostly Correct			Incorrect
Body	Topic is fully explained with relevant examples	Topic is mostly explained with examples			No Explanation
Marks (01)				Correct	Incorrect
Conclusion				Proper Conclusion	No Conclusion
Marks (01)				Correct	Incorrect
Correct Sentences with correct relationship b/2 subject & verb				Less than 3 mistakes	03 or more mistakes
Marks (01)				Correct	Incorrect
Grammar & Spelling				Less than 3 spelling and/or grammer mistakes	3 or more spelling and/or grammer mistakes

Grade XII-Q14. Aggregate Percentage Score Rubric Wise

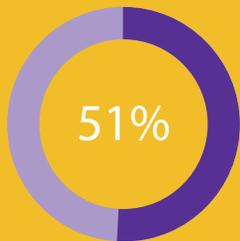


KEY FINDING:

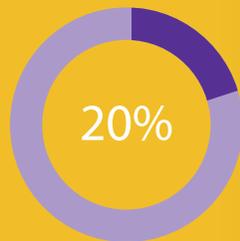
Students lack the ability to write an essay introduction or a conclusion while showing general lack of grammar & creative writing skills.



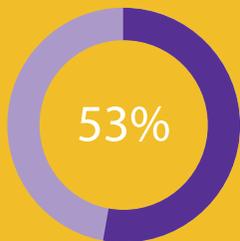
Essay-Introduction



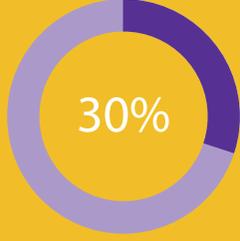
Essay-Body



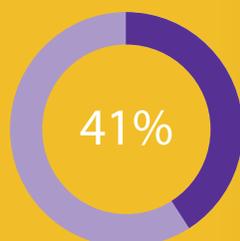
Essay-Conclusion



"Essay-Correct Sentence with correct relationship b/w subject & verb"

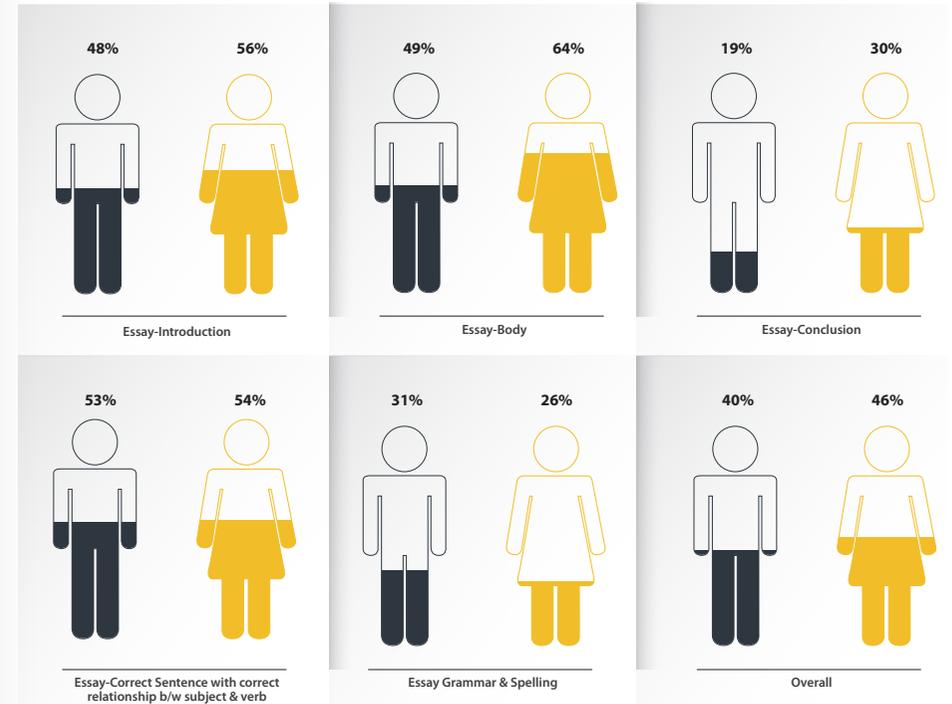


"Essay-Grammar & Spelling"



Overall

Grade XII-Q14. Aggregate Percentage Score Gender Wise



SUGGESTIONS:

- Teachers should focus on creative writing in classrooms while focusing on how to open and conclude an essay properly.

Q.15 (a) CHANGE THE NARRATION OF THE FOLLOWING

- i) I said to them, "Obey your elders".
- ii) He said to me, "What are you saying?"
- iii) She said, "I am quite fine here."
- iv) You said, "It may rain today."
- v) He said to me, "I will teach you English."

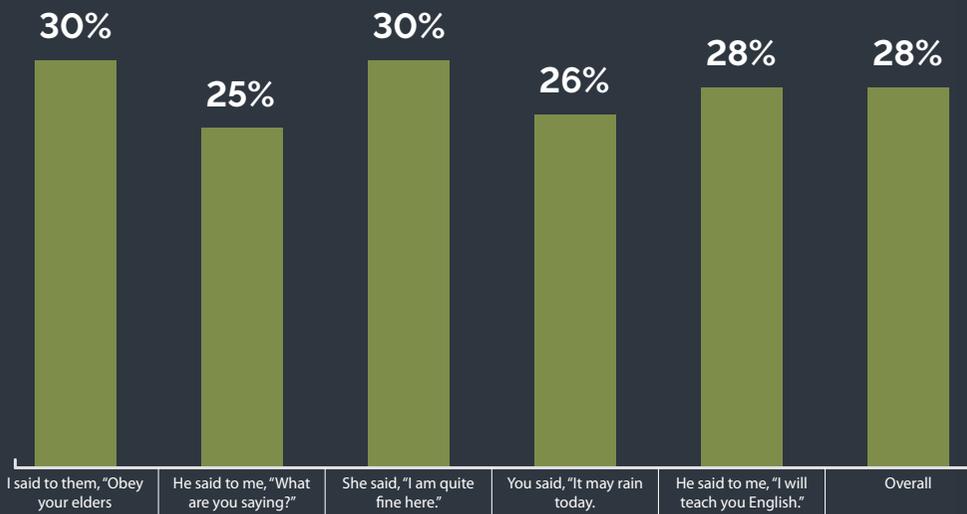
Q.No. 15 (Part a)		Total Marks:05
Marking Scheme		
Criteria	Correct	Incorrect
Question 15 (a) i	Correct Narration	Incorrect Narration
Question 15 (a) ii	Correct Narration	Incorrect Narration
Question 15 (a) iii	Correct Narration	Incorrect Narration
Question 15 (a) iv	Correct Narration	Incorrect Narration
Question 15 (a) v	Correct Narration	Incorrect Narration

Grade XII-Q15 (a). Aggregate Percentage Score Rubric Wise



KEY FINDING:

On average students scored 30% or less in every part of the question, however female students' average score is 41% or more. It shows overall lack in sentence narration and logical argument sequencing.



Grade XII-Q15 (a). Aggregate Percentage Score Gender wise



SUGGESTIONS:

- Teachers need to focus on improving semantics, adverbial modification of sentences, and argument structure of students to improve overall performance.

Q.15 (b) USE THE FOLLOWING PAIR OF WORDS IN YOUR OWN SENTENCES TO DISTINGUISH THEIR MEANINGS.

- i) Pour, Pore
- ii) Lesson, Lessen
- iii) Corpse, Corps
- iv) Bail, Bale
- v) Born, Borne

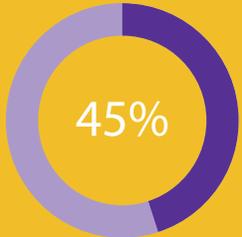
Q.No. 15 (Part b)		Total Marks:05	
Marking Scheme			
Criteria	Correct	Incorrect	
Question 15 (b) i	Correct usage of words & sentences	Incorrect usage of words & sentences	
Question 15 (b) ii	Correct usage of words & sentences	Incorrect usage of words & sentences	
Question 15 (b) iii	Correct usage of words & sentences	Incorrect usage of words & sentences	
Question 15 (b) iv	Correct usage of words & sentences	Incorrect usage of words & sentences	
Question 15 (b) v	Correct usage of words & sentences	Incorrect usage of words & sentences	

Grade XII-Q15 (b). Aggregate Percentage Score Rubric Wise

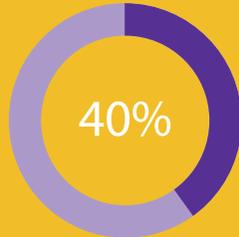


KEY FINDING:

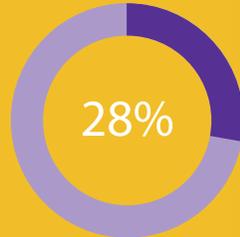
On average, students lack the ability to differentiate between similar sounding words in English language whereas female students have performed better than their male counterparts by 9%.



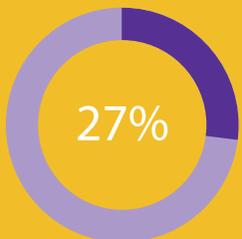
i) Pour, Pore



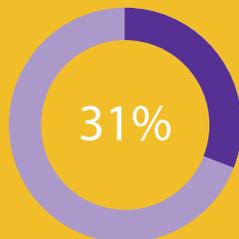
ii) Lesson, Lessen



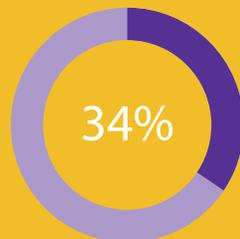
iii) Corpse, Corpst



iv) Bail, Balet



v) Born, Borne



Overall

Grade XII-Q15 (b). Aggregate Percentage Score Gender Wise



SUGGESTIONS:

- Teachers need to improve vocabulary of students with creative writing exercises.

Q.16 WRITE THE SUMMARY OF THE LESSON “JINNAH'S VISION OF PAKISTAN”.

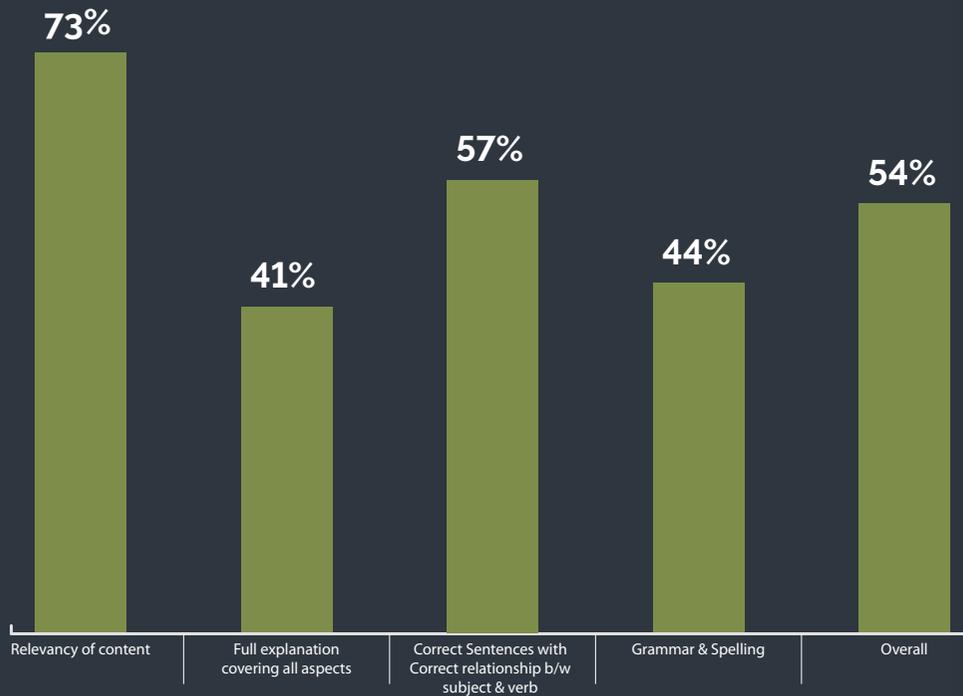
Q.No. 16		Total Marks:10		
		Marking Scheme		
Marks (03)		Correct		Incorrect
Relevancy of content		Correct Relevance		Irrelevant
Marks (05)	Correct	Mostly Correct		Incorrect
Full explanation covering all aspects	Correct	Mostly Correct		Incorrect
Marks (01)			Correct	Incorrect
Correct sentences with correct relationship b/2 subject & verb			Less than 3 mistakes	03 or more mistakes
Marks (01)			Correct	Incorrect
Grammer & spelling			Less than 3 spelling and/or grammer mistakes	3 or more spelling and/or grammer mistakes

Grade XII-Q16. Aggregate Percentage Score Rubric Wise



KEY FINDING:

Most of the students have made 3 or more than 3 grammar or spelling mistakes which should be a cause of concern. Similarly, most students were not able to provide full explanation covering all aspects of topic to correctly show relationship between subject and verb by making 3 or more than 3 mistakes.



Grade XII-Q16. Aggregate Percentage Score Gender Wise



SUGGESTIONS:

- Teachers should focus on improving lexical aspect of language of students by focusing on proper use of nouns, pronouns, adverbs, verbs, tenses etc.

Q.17 WRITE THE CHARACTER SKETCH OF “KING LEAR” OR “SHYLOCK”.

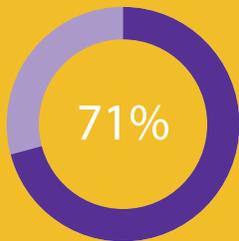
Q.No. 17		Total Marks:10		
Marking Scheme				
Marks (03)		Correct		Incorrect
Relevancy of content		Relevant		Irrelevant
Marks (05)	Correct	Mostly Correct		Incorrect
Full explanation covering all aspects	Correct	Mostly Correct		Incorrect
Marks (01)			Correct	Incorrect
Correct sentence with correct relationship b/w subject & verb			Less than 3 mistakes	3 or more mistakes
Marks (01)			Correct	Incorrect
Grammar & spelling			Less than 3 spelling and/or grammar mistakes	3 or more spelling and/or grammar mistakes

Grade XII-Q17. Aggregate Percentage Score Gender Wise

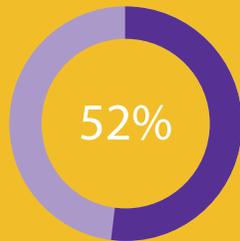


KEY FINDING:

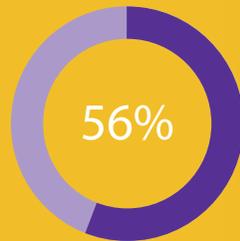
Although most of students have written relevant content, however students were unable to cover all aspects of the character.



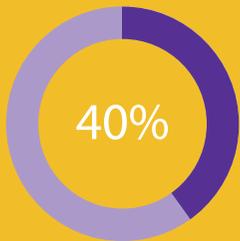
Relevancy of content



Full explanation covering all aspects



Correct Sentence with correct relationship b/w subject & verb



Grammar & Spelling



Overall

Grade XII-Q17. Aggregate Percentage Score Rubric Wise



SUGGESTIONS:

- Teachers should focus on explaining the characters in a more comprehensible manner to increase students' understanding of the lesson.

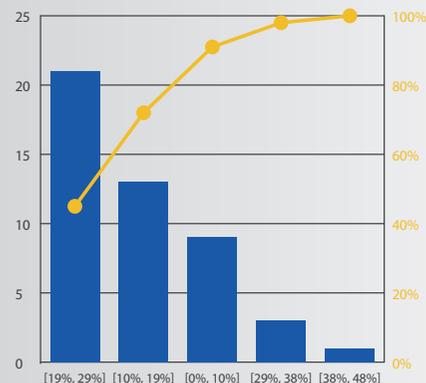
A LOOK AT MARKERS' PERFORMANCE

One of the biggest challenges that rMarker solves is the continuous monitoring of e-markers to minimize effects of negative elements like marker fatigue or bias. rMarker uses a live monitoring system based on statistical frameworks that consistently measure a markers' marking behavior against a base line score. In case of the deviation passing permissible limits, the marker is stopped from marking and reasons for this deviation are investigated for addressing. Such thorough mechanism is not available or possible to implement in manual marking.

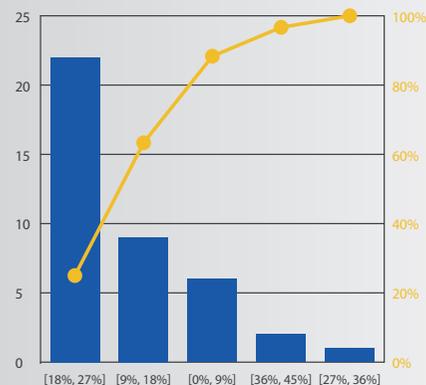
The following graphs represent the data table in Annexure 1 (Markers' Performance) and are an attempt to summarize the variance in marking experienced during the exercise.

It should also be mentioned here that rubric marking was not used in Computer Science which may have resulted in increased variances.

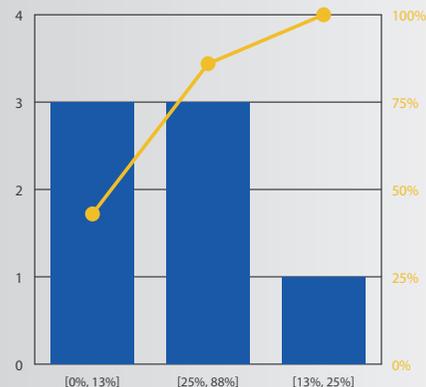
It is important to highlight the value of the added controls rMarker provides to invigilating bodies like examination boards. Boards can now monitor and have real time control on marker performance. This system also allows for the automation of this monitoring process where permissible limits can be set to ensure that e-markers do not pass certain variance thresholds. The underlying objective of this ability is not only to minimize marker biases and increase marking standardization but to also be able to develop targeted training and development programs based on e-marker shortfalls.



Graph 1 represents the combined variance for both the subjects. The minimum to maximum variance experienced for both the subjects was 0% to 48%. The graph represents the number of teachers that fall within variance ranges where the largest group of 21 teachers showed a variance between 19% to 29% and only 13 teachers lied in the variance range of 10% to 19%.



Graph 2 represents teacher performance for the English subject only where the minimum to maximum variance experienced for English was 0% to 45%. We can see that in English alone the 22 teachers showed variances between 18% to 27% followed by 9 teachers showing variances ranging from 9% to 18%



Graph 3 represents teacher performance for the Computer Sciences subject only where the minimum to maximum variance experienced for the subject was 0% to 38%. It is important to mention here that due to a small number of computer science's papers only 7 teachers were used for the checking exercise.

We can see that in Computer Sciences 3 teachers showed variances between 0% to 13% followed by 3 teachers showing variances ranging from 25% to 38%.

QUALITY ENHANCEMENTS

e-marking or Online-Onscreen marking provides much greater opportunities to maintain quality of marking and the subsequent results. This is achieved through features provided within the software to monitor e-markers' progress, re-mark answer scripts based on set rules (percentage of aggregate marking difference (AMD)), premarking standardization, block markers with AMD higher than the tolerance level etc. Adding rubrics to marking schema and allowing markers to assign marks only through this scheme minimizes the risks of incorrect marks being assigned. Another important factor in improving quality of any examination system is the feedback given to students. In the traditional or manual system, the feedback given by the markers does not get captured and fails to contribute to any micro/macro level geographic education strategy formulation. In Online-Onscreen, however, every annotation is stored with the marked answer script which allows the markers to effectively give their feedback to students in a timely manner. This can have a positive impact on their learning which can bode well for their academic success.



DID YOU KNOW?

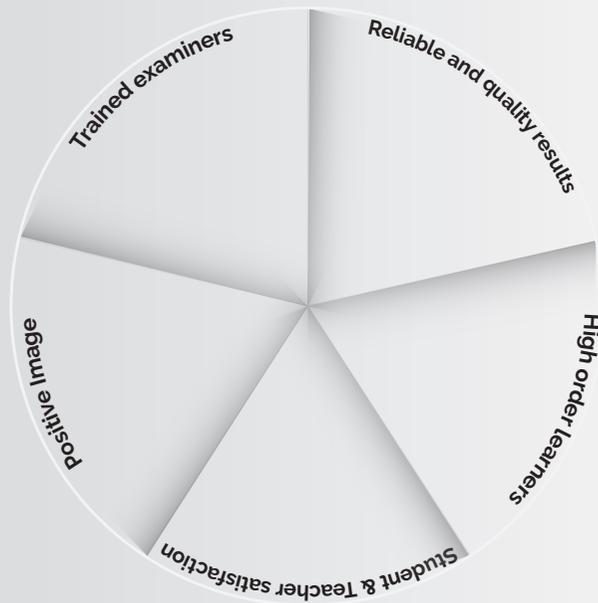
rMarker allows for monitoring of e-markers, by taking live pictures to curtail impersonation



EFFECTIVENESS OF E-MARKING

It is of utmost importance for any examination body to ensure transparency and maintain high level of quality and accuracy at all times i.e., the results generated through the examination system are reliable. Online -Onscreen marking enables the examination bodies to effectively monitor markers in real-time with strict controls. Candidates also receive a positive benefit as the results are compiled and delivered to them in

a quicker timeframe which also projects a positive brand image of the examination body. Furthermore, Online-Onscreen marking also provides students with essential feedback that helps them in improving their mental capabilities. By utilizing the recent technological advancements, examination bodies can reap many benefits, some of which are listed below.



ADMINISTRATIVE EFFICIENCY & EFFECTIVENESS

Exams conduct and result generation is an arduous task that involves numerous administrative mechanisms. In the current scenario, examination bodies employ several human resources to carry out activities that require a substantial cost and are time inefficient. By introducing Information and Communication Technologies (ICTs) this mechanism can be leveraged to make it cost-effective and minimize human dependency.

In this context, logistical arrangements of masking student identity, distributing answer scripts to markers and getting them returned to a centralized location is inefficient and a security risk as well as providing opportunities for malpractices. Maintaining results in Microsoft Excel Spreadsheets is a tedious process that involves human resources that are error prone and mistakes happen. With Online Onscreen marking, markers no longer need to visit a marking center or carry a bundle of papers home to be marked and returned to the competent authority for

result compilation. Markers can mark student responses as they appear on their computer screens and scores given to student responses are automatically captured and results are compiled.

An advanced e-marking solution, such as rMarker, makes these processes smoother and easy to manage. There are tools available within the software solution that help in assigning marker roles, set up workflows for multiple markers. It also creates a marker hierarchy as well, so that the process is efficient, quick, and secure.



DID YOU KNOW?

rMarker reduces result generation time many folds

UNIFORMITY & STANDARDIZATION OF MARKING

Examination bodies highly rely on their markers to produce best quality and consistent results, but this becomes a difficult task when several markers are involved. There are several mechanisms that can be utilized to overcome these challenges: rubric based marking and seeding being the key. In manual marking it is not possible to ensure that these two mechanisms are fully complied with. Whereas in Online-Onscreen marking, markers are compelled to assign marks based on the rubrics defined by the examination controllers hence promote standardization and uniformity. It is also possible to automatically compare marking with seeding hence any deviation (predefined tolerances) from the standard marking can be tracked in real-time, marker apprehended or blocked from marking further and sent for remarking from a third marker. Since this process is carried out automatically, it saves a massive administrative liability.



SAFETY, SECURITY, RELIABILITY, & ANONYMITY



High level of security cannot be maintained through marking on paper or by maintaining excel sheets for results as this relies heavily on human involvement and access controls cannot be adhered to in their entirety while also raising the chances of mistakes to happen. Online-Onscreen marking automatically overcomes these challenges through maintaining user permissions that allows a certain user to only access areas of the system that are permitted, an audit report can be generated detailing all areas/ files accessed by a particular user. All marks assigned by the markers are automatically saved in the system and result compilation is an automatic process removing the chances of mistakes through data entry processes of the manual system hence making it exceptionally reliable.

Maintaining student and marker anonymity is of utmost importance for any examination body. Online-Onscreen marking solution automates this process by hiding student identity and only shows a section of student response relevant to a particular question. This particular feature has the potential to have a prodigious impact on cost effectiveness as well, as it eliminates the manual process of attaching fictitious roll numbers to students' answer scripts. Once digitalized, these answer scripts are stored in a secure database that ensures privacy, data integrity and security, data backup and recovery.



DID YOU KNOW?

rMarker utilizes international security standards used in Banking Software's

CHALLENGES & WAY FORWARD

CAPACITY BUILDING

Based on our experience we highly recommend that capacity building must be carried out to ensure efficiency of rMarker in its entirety. We believe that any person with basic computer knowledge can easily equip themselves with the skills of e-marking within a short time of 20-30 minutes.

These trainings should be focused on three main segments given below.

Training of teachers:

For teachers or markers to utilize the full potential of rMarker, it is of utmost importance that teachers are given prior training on how to use rMarker. This can be carried out through various mediums of instructions such as built-in training module, demo videos, presentations etc. This is also an ongoing process within rMarker where a teachers' performance is actively monitored via pre-marking standardization through test installment. During an assignment teachers' performance is also monitored by seeding where aggregate marking difference is checked, and a marker can be selected for retraining if the difference does not fall within the tolerance level. We can also focus on key areas for retraining based on aggregate marking difference against each rubric.

Training of invigilation staff:

rMarker uses a specially designed answer booklet which is different from the answer booklet currently in use by any Education Board. For example, this newly designed answer booklet's cover page requires students to fill out certain areas using bubbles such as their roll numbers, extra sheets attached etc. It is extremely important that the invigilation staff has been trained to guide students in filling out this information correctly to avoid any manual handling of errors.

Training of students:

Students are accustomed to the usual answer booklet that the Education Board supplies for all examinations held under their umbrella. It can be a challenge for the students to adapt to new design, hence it is particularly important that students are trained on how to fill out the answer scripts prior to appearing in the examinations. This again, can greatly improve the efficiency of rMarker by reducing manual handling of errors arising because of erroneously filled answer script.

rMarker compels teachers to grade student responses through rubric marking



TRANSITIONING TO ONLINE-ONSCREEN MARKING

As mentioned earlier, making a move to Online-Online screen marking will require trainings of various segments. It also suggests that this cannot be a one-time process and must be achieved through adapting a stepwise approach. A recommended method may be to select one class and one subject in the first phase to identify any shortcomings and streamline necessary steps to resolve any inaccuracies. Once phase one is completed successfully, a complete class with all subjects may be transferred to Online-Onscreen marking. This process can continue over a period of 3-5 years to complete overall transformation to the new system. Other approaches may also be adapted as deemed fit by the competent authority.



DID YOU KNOW?

Cross or inter-board paper marking can be conducted without the inconvenience of logistical arrangements

WOMEN EMPOWERMENT THROUGH ACCESSIBILITY



With the dawn of new era and advancements in the telecommunication landscape of Pakistan, internet connectivity has improved leaps and bounds across the nation although certain parts and territories still lack or have limited internet access. In most urban and rural areas, where internet is available, e-markers especially women can be engaged for marking exams that can improve their socio-economic status and result in women empowerment.

ADAPTING TO THE NEW NORMAL

Introduction of computer technology to optimize internal and external processes is inherently precarious for any organization. Resistance to change can be detrimental for any organization investing heavily in computer technologies that the employees fail to accept. This can be mitigated by confidence building through comprehensive training programs and demo exercises for experienced paper-based markers. For administrative personnel, it is important to have a phase-wise approach so that the system can be adapted in several steps rather than a one-time approach. Employees that get directly affected should be apprised about the benefits of the new system as well as building their capacity so that their newly acquired skills can be utilized in other departments where required.

E-makers can conveniently mark papers without the need to travel, carry papers, no transportation cost, or cultural barriers





Rubric is a tool for considering and evaluating different dimensions of quality teaching and what various levels of proficiency in each of those dimensions may look like. Rubric development is a key process of every examination system where students' responses may vary from each other such as in the case of Open-Ended-Questions or Extended-Response-Questions. This can be a tedious process if it does not accompany item creation or development. It is highly recommended that rubric is developed for each type of question where student skills are evaluated based upon a set of parameters. rMarker can effectively capture data against each rubric or sub-rubrics which is securely stored as part of a students' result. This enables gathering of a vast pool of data with reference to students' learning which can be later analyzed for targeted and informed policy making. This is also a step forward from Paper Based Marking where no such data is available or captured as part of the overall student performance.

Rubric marking can greatly minimize the aggregate marking difference of markers.



GOVERNMENT'S COMMITMENT FOR DIGITAL PAKISTAN

Every examination body or educational institute is working relentlessly to improve their existing systems, enhance their capacities and capabilities, improve quality of services as well increasing user satisfaction in all mediums. This can be greatly supported by introducing new rules at the government level for the procurement of Digital Solutions, that fulfil all requirements but are not cumbersome. A policy shift towards Online-Onscreen marking by the National and Provincial Governments within a specified period can encourage all relevant authorities to promptly move towards digital solutions, which is necessary to keep up with the rest of the world.



Based on experience Red Marker Systems Pvt Ltd plans to quickly move towards the development of one of its kind Computer Based Testing (CBT) platform in Pakistan. This platform while working in unison with rTestGen, which is our item development and item bank solution, will allow for the digital development and proctoring of examinations. We envision a future where our clients will be able to seamlessly generate tests on rTestGen and then invigilate them through our CBT platform with examination participants being able to join globally.

Red Marker Systems' CBT platform will allow corporate organizations the ability to develop and conduct different need-based examinations like Cognitive tests, Domain specific evaluations, Behavioral assessments, and Psychometric estimations. This end-to-end assessment solution for recruitment will help businesses assess large volumes of candidates, while optimizing the hiring process, reducing costs, and boosting company-candidate fit. Furthermore, this will ensure reduction in employee attrition, improvement in employee engagement and faster turnaround times on the hiring process.



Data generated through rMarker can be used for complex data analysis necessary for policy making

ANNEX-1 MARKERS' PERFORMANCE

Login ID	Subject	Marked	Remarked	AMD
aae1730170997665	English	6129	624	21.17%
aae1730112855907	English	93	10	18.00%
aae1730128141485	English	96	13	13.08%
aae1730125268377	English	1269	35	18.54%
aae2160470931611	English	91	8	40.00%
aae1730149903111	English	199	30	15.17%
aae1610112456213	English	1044	84	19.55%
aae1540278234195	English	671	66	21.36%
aae2120376310219	English	1152	105	19.63%
aae1420315570715	English	1578	190	21.82%
aae1730110677053	English	79	12	15.42%
aae1540262845284	English	1357	108	20.13%
aae1730113905483	English	887	48	17.50%
aae1730128319065	English	19	2	15.00%
aae1710110168085	English	164	20	22.88%
aae1710103808697	English	560	64	20.12%
aae1730113920189	English	1502	176	22.14%
aae1730134168205	English	6	1	0.00%
aae1730114076661	English	170	19	25.00%
aae1730118854734	English	204	13	13.75%
aae1720174571511	English	2	0	0.00%
aae1730140955009	English	61	10	13.12%
aae1710150484493	English	48	6	22.08%
aae1730149299009	English	39	5	6.00%
aae1710266121683	English	425	48	18.91%
aae1710211435399	English	4183	428	22.26%
aae1730116260233	English	45	4	7.50%
aae2140296816649	English	121	16	27.19%
aae1730168567961	English	561	58	18.49%
aae1730168540217	English	8	2	25.00%
aae3740537332203	English	150	17	22.65%
aae1620176040479	English	422	48	23.12%
aae1710118530789	English	116	6	20.83%
aae1710211677569	English	207	20	17.25%
aae1610144804037	English	19	1	13.75%
aae1610281995423	English	11	1	0.00%
aae1710247091535	English	95	10	37.50%
aae1730124922087	English	2	0	0.00%
aae1710103704889	English	289	24	25.83%
aae2140729773781	English	247	18	22.08%
aae1730107600027	Computer Science	657	72	21.61%
aae1730132779411	Computer Science	41	1	0.00%
aae1730128296573	Computer Science	60	8	29.69%
aae1120103805643	Computer Science	333	29	28.71%
aae1730129885965	Computer Science	21	1	37.50%
aae1730128895793	Computer Science	34	2	3.12%
aae2120220358301	Computer Science	1	0	0.00%



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