The Hashemite Kingdom of Jordan

Ministry of Education

Examination and Test Managing Directorate

Test Directorate

2020-2021 National Survey (EGRA and EGMA) Findings

Full Report

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List of abbreviations and acronyms

CWPM	Correct words per minute
DFID	Department for International Development
EdData II	Education Data for Decision Making II
EGMA	Early Grade Mathematics Assessment
EGRA	Early Grade Reading Assessment
ETMD	Examination and Test Managing Directorate
FCDO	Foreign, Commonwealth and Development Office
G2	Grade two
G3	Grade three
MOE	Ministry of Education
MSA	Modern Standard Arabic
ORF	Oral reading fluency
L1	Level 1
L2	Level 2
RAMP	Reading and Mathematics Program
SSME	Snapshot of School Management Effectiveness
USAID	United States Agency for International Development

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Executive summary

This report presents the findings of the early grade reading and mathematics learning loss study as part of the Early Grade Reading and Mathematics Initiative (RAMP). This study was conducted at the end of February and at the beginning of March of 2021.

Theoretical background

In response to the findings from all the activities measured in 2014, RAMP was launched in Jordan with a 5-year implementation plan on 1 January 2015. The initiative was funded by the United States Agency for International Development (USAID) and Foreign, Commonwealth and Development Office (FCDO)[1]. RAMP aimed to develop an intervention program that would support teachers in providing deliberate, structured, and developmentally appropriate daily instruction to develop the students' foundational skills for reading and mathematics. RAMP, whose implementation is led by RTI International, has been extended for three more years to end in December 2022The objective of the extension is to institutionalize RAMP initiative within the Ministry of Education (MOE).

RAMP's effectiveness and impact were evaluated by conducting a midline survey in May 2017 to measure the impact of the initiative in its first 2 years, followed by an endline survey conducted in May 2019 to measure the impact and the progress of the initiative toward its benchmarks. In 2021, a survey was conducted to measure the learning loss among students caused by the school closures since March 2020 due to the coronavirus pandemic (Covid-19). This survey, which was conducted in exceptional circumstances, sought to identify the repercussions of the closures for the students' reading and mathematics skills. The 2021 national survey was implemented in partnership within the Examination and Test Managing Directorate (ETMD) in the MOE.

Methodology

Because of Covid-19 circumstances the world is experiencing, it was decided to minimize the sample of the 2021 national survey to become only 120 schools—10 schools form each of the 12 governorates and 20 grade two (G2) and grade three (G3) students from all selected schools with a total of 2400 students. The students were randomly selected, with consideration to the relative weight of the governorates when analyzing the findings. Given the MOE's interest in a better understanding of the impact of the Syrian refugee situation on education in Jordan, the survey also included an additional sample of 30 schools distributed over three sectors: Syrian students' schools, refugee camps schools, and UNICEF schools—10 schools were sampled from each sector. The timing of the data collection in 2021 was as close to 2019 as possible March 2021 vs. April/May 2019. The 2021 school sample was a subsample of the 2019 random sample. However, due to the field limitations, we selected only 10 schools per governorate with the highest G2/G3 enrollment instead of twenty (to ensure the presence of students with the ongoing Covid-19 situation). Among the sampling determinants were the availability of G2 and G3 at the selected

[1] At the time, the UK's FCDO was called the Department for International Development (DFID).

schools and excluding the newly established schools as well as military schools because teachers these had not undergone RAMP training programs.

It is important to note that the samples of 2019 and 2021 were drawn at three levels: school, class/teacher, and student. To address the issue of disproportionate sampling and, mathematical calculations were made to control the statistical weight of each selected student in the sample. However, the 2021 sample is representative of the large schools in Jordan. For this reason, the analysis compared only the same schools that were in the 2019 and 2021 sample.

Because of the re-closure based on the MOE's decision 0made on 10 March 2021 to shift toward online education, the study was able to collect data only from 96 schools out of 120 schools, with an average of eight schools from each governorate. It was also possible to collect data from eight Syrian schools, eight Refugee camps schools, and eight UNICEF schools.

Data on students' performance were collected via electronic Early Grade Reading Assessment (EGRA) and Early Grade Mathematics Assessment (EGMA) tools. Additional information about the students' situations, in light of the coronavirus pandemic and online learning, was collected via a student questionnaire. This was done through 66 MOE employees after providing them with the necessary training and taking field quality control measures.
To conduct statistically accurate comparisons, the results of the 96 schools assessed in 2021 were compared with the results of those same 96 schools from the 2019 survey.

Findings

Overall, a notable decline (mainly in mathematics) has been observed in the learning levels of G2 and G3 students, with some improvement in some of the tasks that we will address in this report. The learning loss in G2 tended to be greater than it was in G3.

EGRA Results

Here, we present two variables: fluency (the number of correct answers per minute) and accuracy (the percentage of correct answers out of the attempts made by the student). ***Table 1*** displays the reading fluency results of G2 and G3 students in 2019 and 2021. The results indicate that there is a statistically significant decrease in most of the fluency tasks among the students of both grades in 2021 compared to 2019 while in the oral reading fluency (ORF) task the decrease in the fluency percentage between the two years was not statistically significant for either of the two grades.

Table 1. EGRA fluency results of G2 and G3 students in 2019 and 2021

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Letter sounds	Fluency (# of correct letters per min.)	49.4	38*	55.6	48.2*

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Syllable sounds	Fluency (# of correct syllables per min.)	29.7	23.4*	37.2	33.7
Invented words	Fluency (# of correct invented words per min.)	13.1	10.1*	17.4	15.3
Oral reading	Fluency (# of correct words per min)	20	16.5	34.9	32.3
Reading without diacritics	Fluency (# of correct words per min.)		14.5		32.9

***Statistically significant at level 0.05 when comparing G2 (2019 vs. 2021); G3 (2019 vs. 2021)**

In terms of accuracy in reading, it is summarized in ***table 2***. Results indicate that there is consistency in some tasks and a noticeable increase in the percentage of the students' correct answers in 2021 compared to 2019., while in 2021 there was a decrease in the reading comprehension task, whether reading aloud or silently (which may be attributed to the testing passages change).

Table 2. EGRA accuracy results of G2 and G3 students in 2019 and 2021

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Letter sounds	**% correct attempts**	80.9%	79.1%	82.2%	83%
Syllable sounds	**% correct attempts**	67.9%	68.3%	75.5%	77%
Invented words	**% correct attempts**	54.3%	53.7%	59.8%	60.6%
Listening comprehension	**% correct answers**	53.5%	50.8%	64.4%	60.8%
Oral reading	**% correct attempts**	52.4%	46.9%	68.4%	66.2%
Reading comprehension	**% correct attempts**	41.4%	50.6%*	60.5%	70.6%*
	% students with reading comprehension by 80%	14.4%	10.7%	34.1%	39.4%
Reading without diacritics	**% correct attempts**		56.4%		76.5%

***Statistically significant at the level 0.05 when comparing G2 (2019 vs. 2021); G3 (2019 vs. 2021)**

EGMA Results

Regarding mathematics, ***table 3*** displays a summary of the EGMA fluency results for G2 and G3 students in 2019 and 2021. The results indicate a statistically significant decline in the fluency of all mathematics skills in 2021 compared to 2019, which implies that the learning loss in mathematics is greater than it is in reading.

Table 3. EGMA fluency results of G2 and G3 students in 2019 and 2021

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Number identification	**Fluency (correct items per min.)**	35	29.7*	47.8	39.9*
Addition L1	**Fluency (correct items per min.)**	11.9	10.2*	14.4	12.7*
Subtraction L1	**Fluency (correct items per min.)**	9.6	7*	11.4	9.9*

***Statistically significant at the level 0.05 when comparing G2 (2019 vs. 2021); G3 (2019 vs. 2021)**

In terms of EGMA accuracy for G2 and G3 students in 2019 and 2021, it is summarized in ***table 4***. The results indicate that there is a decline in G2 and G3 students' performance accuracy in addition and subtraction level 1 (L1) in 2021 while the greatest learning loss occurred at the more difficult subtask such as addition and subtraction level 2 (L2), missing number, and word problems skills.

Table 4. EGRA accuracy results of G2 and G3 students in 2019 and 2021

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Number identification	**% correct answers**	89%	86.2%	95.5%	93.8%
Quantitative Comparison	**% correct answers**	81.2%	85.4%	90.6%	91.1%
Addition and Subtraction L1	**% correct answers**	53.2%	42.5%*	62.6%	55.5%*
Addition and Subtraction L2	**% correct answers**	47.6%	29%*	59.9%	46.9%*
Missing Number	**% correct answers**	56.2%	44.6%*	72.8%	63.9%*
Word Problems	**% correct answers**	56.8%	53.4%	71.5%	71.1%

***Statistically significant at the level 0.05 when comparing G2 (2019 vs. 2021); G3 (2019 vs. 2021)**

Key Performance Indicator Results

Generally, the main objective of the assessment is to identify the students' skills in reading and mathematics by measuring the key performance indicators results and identifying the indicators on which the performance has or has not improved between 2019 and 2021. ***Table 5*** below shows a summary of the key performance indicators results. Overall, compared between 2019 and 2021, the results show a lower performance level of G2 students while G3 students had a better performance. The results clearly indicate a low proficiency in mathematics, especially in G2. There is also a statistically significant decline in the main indicator results of mathematics and silent reading comprehension, with relatively consistent results in reading comprehension and fluency indicators. What is interesting is the progress in the fluency and comprehension indicators of G3 although it is not statistically significant.

Table 5. RAMP's indicators result—measurement indicators in 2019 and 2021

Indicator Number	Indicator	2019	2021
GL_01	***Percentage of students who, by the end of G2, demonstrate reading fluency and comprehension of grade-level text.***	14.4%	10.7%
GL_02	***Percentage of students who, by the end of G2, demonstrate silent reading comprehension of grade-level text.***	45.1%	12.9%*
GL_03	***Percentage of students who, by the end of G2, demonstrate that they can do grade-level mathematics with understanding***	19.3%	6.1%*
GL_04	***Percentage of students who, by the end of G3, demonstrate reading fluency and comprehension of grade-level text.***	34.1%	39.4%
GL_05	***Percentage of students who, by the end of G3, demonstrate silent reading comprehension of grade-level text.***	76.9%	43.8%*
GL_06	***Percentage of students who, by the end of G3, demonstrate that they can do grade-level mathematics with understanding***	30.7%	18.4%*
GL_07	***Percentage of students obtaining zero scores in ORF at the end of G2.***	21.8%	21.3%

Conclusion

Overall, the results of this survey tend to show a similar performance level in reading skills between 2019 and 2021. However, they indicate greater concerns about the low proficiency in mathematics skills. The decrease was greater among G2 students than it was among G3 students. The results also indicate that there was either consistency or improvement in the percentages of students who got zero scores (those who could not read a single word) in both reading and mathematics skills for both grades.

On one hand, accuracy scores in all reading skills tended to remain consistent. On the other hand, the fluency scores tended to slightly decline from 2019 to 2021. There was a significant decline in

the zero scores of the foundational skills such as letter sounds and syllable sounds, which is a positive thing that proves that students have the minimum level of the skill. The biggest decline was in G2, particularly in reading comprehension. The comprehension levels decreased significantly. The percentage of G2 students who read with fluency and comprehension decreased from 14.4% in 2019 to 10.7% in 2021. As for G3, there was no decline thanks to the MOE's efforts in developing teaching methods during the last two years. In addition, the percentage of students who read at least 46 correct words decreased in both grades.

Regarding mathematics skills, as in reading, fluency levels were affected by school closures, and there was a decline in all subskills in both grades (the decline was greater in mathematics than it was in reading). Generally, the greatest decline percentages were in higher skills such as addition and subtraction L2 and the missing number problems. There were also significant declines in the percentage of G2 and G3 students who meet the benchmark of doing mathematics with understanding. The percentage of G2 students declined form 19.3% in 2019 to only 6.1% in 2021 while the percentage of G3 students declined from 30.7% in 2019 to 18.4% in 2021.

In general, the decline in G2 and G3 students' results in most of the skills in 2021 compared to 2019 might be attributed by the interruption of face-to-face learning and the shift toward distance learning due to Covid-19. Distance learning started in mid-March in the second semester of the school year 2019-2020 and continued until most of the school year 2020-2021. Furthermore, there was the interruption caused by the teachers' strike, which lasted for one month during the first semester of the school year 2019-2020. In 2021, EGRA and EGMA assessments were implemented at the end of February while they were implemented at the end of April in 2019, which means that the time difference—estimated by two months—was in favor of the 2019 survey. It was also that the decline in G2 students' skills was significantly greater than it was in G3 students' skills. This is mainly attributed to the fact that G3 students had been exposed to face-to-face learning much more than their G2 peers within the last three years. G3 students received approximately 14 months of face-to-face learning—i.e., 62.5% of their school career compared to only 6 months for the G2 students—i.e., 41.7% of their school career.

On the other hand, there was an improvement among G3 students in reading aloud with comprehension. The percentage increased from 34.1% to 39.4%. This could be attributed to the maturity and sustainability of the skills of G3 students because they received more face-to-face instruction, in addition to their ease of follow-up by parents and teachers during distance learning, because they have achieved a large part of basic reading skills during the period prior to their transition to distance learning.

There was a noticeable decline the results of mathematics skills in both grades, but it was greater among G2 students. The rationale behind this decline is a set of factors. First, the uniqueness of mathematics that necessitates a specialized teacher and face-to-face instruction for the concrete, semi-concrete, and abstract sequencing—which is difficult to achieve in distance learning. Second, the students' need for materials and tools to help them learn mathematics. Third, due to the need for constant practice, mathematical skills are quite forgettable. Finally, the limited mathematics skills of parents may have prevented them from following up with their children at home.

Moreover, there was noticeable improvement in zero scores, in both mathematics and reading skills, this could be explained by the fact that distance learning contributes to achieving the minimal level of learning as explained by ministry team. However, it is difficult for students to reach higher performance levels via remote learning due to lack of interaction and individual differences considerations, in addition to the low capacities of many parents and their lack of skills and experiences possessed by classroom teachers.

Although there were concerns that lower-performing students may suffer the greatest losses during school closures—which has been hypothesized globally—the results from this study showed no increases in the proportions of G2 and G3 learners who were unable to identify a single item across subtasks correctly (i.e. 'zero scores'). Conversely, ***results showed significant reductions in zero scores for G3 students in basic skills (letter and syllable sounds), and for G2 students in higher order reading skills (silent reading comprehension)***. These reductions in 'zero scores' from 2019 to 2021 are arguably the result of RAMP and MOE's focus on low-performing children and differentiated instruction over the past two years.

It is worth mentioning that there is promising evidence of the positive impact of a set of activities implemented during distance learning. The students who followed the distance-learning program daily through the "Darsak" platform achieved better results compared to the students who did not utilize the platform. Additionally, the students who were given regular exercises/tasks by their teachers also had better results than the students who did not receive exercises regularly. Furthermore, G2 students whose parents read to them regularly had better results in reading than those whose parents did not read to them regularly. However, there are downsides of distance learning that contributed to the decline of students' skills. These downsides include:

- The inconsistency of equal learning due to the lack of needed devices among many learners.
- The inability of teachers to teach advanced curricula via online platforms.
- The lack of monitoring and support by supervisors.
- The inability of teachers to consider individual differences or apply differentiated instruction
- The inability of teachers to utilize and follow up on workbooks; and
- The overlapping of programs applied to G2 and G3 students (recovery program, critical outcomes program…etc.)

On the other hand, a dramatic decline was also noticed in all skills of refugee camp students. This can be attributed to the discrepancies among camp teachers in terms of experience in RAMP since all of them are substitute teachers most of whom have not been trained on the RAMP methodologies. Another rationale is the economic and psychosocial issues from which camp residents, particularly students, suffer.

Overall:

The similarity of scores in some reading tasks is positive but should not be seen as confirmation that no learning loss occurred. First, it is important to remember that the 2021 assessment was conducted 2 months earlier than 2019 EGRA. Additionally, the MOE (with RAMP support,) had

made a substantial effort to improve early grade reading and mathematics performance in the last two years, and without the school interruption, we could have seen substantial gains in performance. Instead, we observe that the MOE, through its different interventions during school closure, has managed to mitigate the impact on reading skills.

Additionally, children with limited access to distance education programs show much lower results than their peers who attended it regularly. The implication is that remediation and recovery efforts must be focused heavily on students at the start of school. One needs to teach these children "at the right level" and start from where they are, not where they should be per the curriculum.

While average learning losses were not nearly as large as some have feared, there was still evidence of reduced performance in nearly all mathematics skill, as well as several reading skills. This is particularly troubling for the most vulnerable children, who are least likely to have had access to distance learning opportunities or support for learning at home. As a result, it will be more important than ever to redouble RAMP and MOE efforts on remedial work to ensure that all students are on track and that those who may have fallen behind have sufficient opportunities to build their foundational skills and catch up with their higher-performing peers.

This all points to evidence that MOE's focus on foundational skills, differentiated instruction, and new remediation approaches is important for limiting learning losses (particularly in reading for vulnerable and low-performing children) and will be essential for recovering any lost learning that occurred due to school closures.

Recommendations

- It is imperative that early grade students return to face-to-face learning with their teachers at schools as soon as it is deemed safe to do so. It is also necessary to develop the perquisite plans to provide all students with catch-up programs, particularly in math.
- The e-learning platform must be assessed in terms of efficiency and effectiveness to be enhanced so it would consider student interaction, individual differences, and differentiated instruction.
- Parents need to be provided with demonstrative tools and guiding videos about the importance of the platform and how to interact with it.
- Students need to be provided with reading and mathematics workbooks and encouraged to utilize them.
- Students who do not have the needed devices for online learning should have access to computer labs at schools.
- It is necessary that educational supervisors monitor and provide teachers with effective technical support.
- Summer break and the new academic year must be invested in by creating remedial plans and equipping teachers with various assessment strategies and tools.
- Increasing the time allocated for reading lessons should be considered. Additionally, students must have a wide range of texts and be urged to participate in more interactive reading activities.
- A "time on task" research study needs to be conducted to measure the time students spend on active learning during a typical school day. This should include the extent to which students interact with other printed materials.

Background

The USAID in Jordan, in partnership with the Jordanian MOE, contracted with RTI International in 2011 under the Education Data for Decision Making II (EdData II) project to conduct the Snapshot of School Management Effectiveness (SSME), Early Grade Reading Assessment (EGRA), and Early Grade Mathematics Assessment (EGMA).

A representative national-level sample of 156 public school in Jordan participated in the study. One G2 teacher and one G3 teacher were randomly selected per school, and 10 students from each of these two grades were randomly selected to conduct EGRA and EGMA assessments. The sampled students were also interviewed about their experience in school—3120 students were selected to participate in the assessments and interviews. The selected teachers, along with school principals, were interviewed. One of the researchers observed a selected G2 teacher while he was teaching reading and mathematics. Researchers also conducted an inventory of the school equipment and selected classrooms. Data collection was completed by the end of May 2012.

EGRA, which was orally conducted by using the Modern Standard Arabic (MAS), consisted of five subtasks: identifying letter sounds, recognizing invented words, oral reading fluency of a connected text, reading comprehension, and listening comprehension. Identifying letter sounds and the ability to read unfamiliar words consisting of one syllable are two foundational skills that are necessary to read fluently and comprehensively. EGMA, which was conducted in writing as well as orally, consisted of six subtasks: number identification, quantitative comparison, identifying the missing number (number patterns), addition and subtraction L1, addition and subtraction L2, and word problems. Addition and subtraction L1 tasks were procedural and included one-digit or two-digit numbers so that the sum/difference was less than 20. Students were assigned to solve those problems and give the answer without using a pencil and paper. However, addition and subtraction L2 tasks were more challenging and required students to know the mathematical concepts such as connecting numbers to tens. To solve such problems, students were allowed to use a pencil and paper.

In response to the findings of the 2012 National Survey, it was decided to develop an intervention pilot program that would support teachers in providing deliberate, structured, and developmentally appropriate daily instruction to develop students' foundational skills for reading and mathematics. The intervention was implemented by 400 teachers, who were teaching 347 classrooms in 43 schools and approximately 12000 students. This intervention was assessed in May 2014. The results showed that the skills of the students in the pilot schools that were exposed to the intervention were better than the skills of the students in the control group. The results in the remedial schools improved significantly (From 13% to 24% in reading and from 14% to 24% in mathematics).

In response to findings from all these activities, the Early Grade Reading and Mathematics Initiative (RAMP) began on 1 January 2015 (scheduled for 5 years with an end date of 31 December 2019). Supported by USAID and FCDO, RTI is leading RAMP implementation. For institutionalization purposes, RAMP has been extended for three additional years—i.e. it will last until the end of 2022.

RAMP's effectiveness and impact were evaluated by a midline study conducted in May 2017 to measure RAMP's impact in its first 2 years, and by an endline survey conducted in May 2019 to measure RAMP's impact by the end of the fifth year and the progress of the initiative toward the RAMP indicator targets. In 2021, another survey was conducted to measure the learning loss resulting from school closures caused by Covid-19. Despite the exceptional circumstances surrounding the survey, it was a necessary activity to measure the impact of school closures on students' reading and mathematics skills. This 2021 national survey was conducted cooperatively by the MOE's ETMD and RAMP team.

1.2 Measured students' skills

A set of students' subskills is usually assessed in reading and mathematics. The following presents a description of each skill:

1.2.1 EGRA skills

Seven EGRA subtasks are assessed. ***Table 6*** displays a description of each subtask.

Table 6. EGRA subtasks

EGRA subtask	Skill	The child is asked to… (Description)
Letter sounds (timed)	Alphabetic principle-consistent with letter sounds	Pronounce the sound of a given letter while looking at a piece of printed paper containing 100 randomly ordered letters.
Invented words (timed)	Alphabetic principle-consistent with letter sounds and oral reading fluency	Read a list consisting of 50 nonsense words, in print, and compose alphabet. They are unreal words.
Oral reading (timed)	Fluency (Automatic reading of words in a specific context)	Read aloud a printed, grade-level short story. Reading comprehension (timed)…oral answer.
Listening comprehension (untimed)	Understanding spoken language, meanings, and vocabulary	Listen to a story read aloud by the assessor and then give oral answers to 5 questions about the story asked by the assessor.
Syllable sounds (timed)	Introducing decoding and syllable identification skills	Read a list consisting of 50 randomly ordered syllables.
Silent reading comprehension (untimed)	Comprehension	Read a printed, grade-level short story silently. Reading comprehension (Untimed)...oral answer.

Reading without diacritics (timed)	Fluency (Automatic reading of words in a specific context)	Read aloud—without diacritics—a printed, grade-level short story.

1.2.2 EGMA Skills

Six EGMA skills are assessed. ***Table 7*** presents these EGMA subtasks and a description of each.

Table 7. EGMA subtasks

EGMA Subtask	Skill	The child is asked to… (Description)
Identifying numbers	Ability to identify the written symbols of numbers. If students cannot identify numbers, they will not be able to do mathematics	Mention the names of 20 numbers printed on a paper. Numbers vary between single-digit, two-digit, or three-digit numbers.
Addition and subtraction L1 (basic facts)	Knowledge and feeling confident about basic addition and subtraction operations. Students are expected to have some automaticity/fluency when dealing with such basic mathematics facts as foundational mathematics skills.	Solve addition/subtraction problems whose sum or difference is less than 20 without a pencil and paper. Problems vary between problems including single-digit numbers and problems including skip-count by tens. (10 items)
Identifying quantities (Number comparisons)	The ability to make judgments about differences by doing quantitative comparisons represented by numbers	Determine the bigger number in a pair of numbers. Pairs use a varying rang of numbers including a pair consisting of single-digit numbers, 5 pairs consisting of two-digit numbers, and 4 pairs consisting of three-digit numbers. (10 items)
Missing number (number patterns)	The ability to recognize and complete patterns	Identify the missing number within a pattern consisting of 4 numbers one of which is missing. The used patterns include counting forward and backward by ones, fives, tens, or twos. (10 items)
Addition and subtraction L2	The ability to use and apply the procedural knowledge of addition and subtraction	Solve addition/subtraction problems that include the knowledge and application of addition and

	assessed in level 1 of the same subskill to solve more complex addition and subtraction problems	subtraction facts assessed in level 1 of the same subtask. Students are allowed to use any strategy they want, including the use of a pencil and paper provided by the assessor. Problems extend to addition and subtraction problems that include numbers consisting of two-digit numbers and multiples of 10. (5 items)
Word problems	The ability to interpret a situation (orally presented to the student), develop a plan, and solve the problem	Solve the orally presented problems using any strategy desired by the student, including the usage of a pencil and paper and/or manipulatives provided by the assessor. The numbers used in those problems were deliberately small numbers so that the targeted skills are assessed without causing any confusion or ambiguity between problems and mathematics skills, which could hinder the performance. These problems were designed to introduce different mathematical situations and operations. (6 items)

1.2.3 Additional Data Resources

Oral student questionnaire

This questionnaire has been used to learn about some aspects related to the student's learning, particularly during distance learning, including the effectiveness of the implemented activities, usage of online platforms, parental support, usage of learning resources, homework assigned by the teacher, and others.

1.3 Key performance indicators

RAMP's effectiveness is evaluated via the national survey. This survey is used to collect data to measure the progress in the following key performance indicators:

GL-01 Percentage of students who, by the end of G2, demonstrate reading fluency and comprehension of a grade-level text.

GL-02 Percentage of students who, by the end of G2, demonstrate silent reading comprehension of a grade-level text.

GL-03 Percentage of students who, by the end of G2, demonstrate that they can do grade-level mathematics with understanding.

GL-04 Percentage of students who, by the end of G3, demonstrate reading fluency and comprehension of a grade-level text.

GL-05 Percentage of students who, by the end of G3, demonstrate silent reading comprehension of a grade-level text.

GL-06 Percentage of students who, by the end of G3, demonstrate that they can do grade-level mathematics with understanding.

GL-07 Percentage of students obtaining zero scores in ORF at the end of G2

1.4 Survey objectives

The 2021 survey was implemented for two main purposes:

- To measure G2 and G3 students' reading and mathematics skills/competencies upon returning to face-to-face instruction after the COVID-related school closures.
- To inform the design of the MOE's remedial interventions to account for any learning lost while schools were closed.

Despite the effort of the MOE to ensure the continuity of education through distance education and an e-learning program, there were concerns that the disruption to learners' lives and schooling opportunities may still lead to learning loss. Such losses were also anticipated and estimated by international education specialists across the globe based on previous measurement of summer-break learning loss or other school closures. This survey was designed to provide an understanding of how well the MOE's efforts were able to mitigate the potential losses due to school closures.

2. Methodology

2.1 Sample

In 2021, to measure the learning losses of students, all sampled schools were the same ones sampled in the 2019 survey. Therefore, the sampled population consisted of a list of schools that included early grades, which was sent from the MOE's Education Management Information System (EMIS). In 2019 there were 2565 schools, 347 of which were excluded because they did not include both G2 and G3, in addition to 20 military schools and 5 newly established schools—the final population of interest consisted of 2193 schools. Based on the 2021 data of those schools, 248,972 G2 and G3 students were enrolled in the 2020-2021 school year. The following table summarizes the 2021 sample population.

Table 8. The 2021 sample population

Region	Governorate	Schools	Students in schools
North	Ajloun	70	5707
	Jarash	106	7922
	Irbid	459	45927
	Mafraq	314	25444
Center	Amman	442	73894
	Zarqa	213	37158
	Balqa'a	142	15636
	Madaba	79	6716
South	Karak	154	12731
	Ma'an	110	7007
	Tafila	67	4672
	Aqaba	37	6158
Total		2،193	248972

In the first selection phase of the sample, 2193 schools in 12 governorates were eligible for selection. Ten schools were selected from each governorate, including single-shift, morning shift, and evening shift schools, all of which had both G2 and G3.

In the second phase of selection, one G2 section and one G3 section were randomly selected with equal randomness and probability.

In the third phase of selection, ten G2 students and ten G3 students were selected randomly at an equal probability. Assessors in the sampled schools implemented the second and third phases.

Since the MOE was keen to learn about schools with special circumstances, schools of Syrian students within formal schools and refugee camp schools in addition to schools with disabled students in some governorates were selected in the sample. ***Table 9*** summarizes sample selection processes except for schools with special circumstances.

The 2021 school sample was a subsample of the 2019 random sample. However, due to the field limitations, we selected only 10 schools per governorate with the highest G2/G3 enrollment instead of twenty.

In total, 133 schools were randomly selected from the Kingdom's elementary schools, all of which included G2 and G3, according to the following details:

1. One hundred and twenty public schools equally distributed over the whole governorates, ten schools per governorate. (Basic sample) 120 schools

2. Ten Syrian refugee camp schools in Zarqa and Mafraq (10 schools)
3. Ten schools for Syrians outside camps (including seven schools within the governorates sample, and three additional schools were selected.) 3 out of the sample
4. Ten schools implementing a project by UNICEF (all these schools are within the sample of governorates.) all of them were at the sample.

The following table summarizes the selection process of the core sample at the field level.

Table 9. The 2021 sampling phases

Phase no.	Sampling items	Sorted by	
Phase 1	120 schools	12 governorates, 10 schools per governorate	Selection of large schools
Phase 2	120 G2 classrooms, 120 G3 classrooms	At the level of G2 and G3, One G2 classroom and one G3 classroom per school	Equal probability
Phase 3	1200 G2 students, 1200 G3 students	10 G2 students and 10 G3 students	Equal probability

However, due to the closure of schools—in line with a decision made by the MOE on 10 March 2021—and the transition to distance learning, the national survey could obtain data from only 96 schools out of the 120 sampled ones: eight schools—on average—from each governorate. Additionally, data was collected from eight schools for Syrian refugees, eight refugee camp schools, and eight UNICEF schools.

The following table is a summary of the data collected during the 2021 survey, categorized by governorates, stages (grades), and gender (excluding schools with special circumstances):

Table 10. Descriptive statistics of the final basic sample (classified by gender, type of school, and number of students and schools)

Region	Governorate	Students					Schools
		G2		G3		Total	
		Females (F)	Males (M)	Females (F)	Males (M)		
North	Ajloun	31	45	54	31	161	8
North	Jarash	41	38	39	42	160	8
North	Irbid	37	40	42	38	157	8
North	Mafraq	48	34	38	38	158	8
Center	Amman	35	45	46	35	161	8
Center	Zarqa	50	31	48	31	160	8

Center	Balqa'a	39	33	45	43	160	8
Center	Madaba	35	39	56	25	155	8
South	Karak	46	34	42	37	159	8
South	Ma'an	47	45	48	34	174	9
South	Tafila	38	29	40	32	139	7
South	Aqaba	49	31	54	21	155	8
Total		**496**	**444**	**552**	**407**	**1899**	96

The following table displays the descriptive statistics of the final basic sample for the schools with special circumstances.

Table 11. Descriptive statistics of the final sample (classified by gender, type of school, and number of students and schools)

School type	Students					Schools
	G2		G3			
	F	M	F	M	Total	
UNICEF	51	39	53	38	181	9
Syrian-only	36	38	46	33	153	8
Refugee camps	40	40	38	40	158	8
Total	127	117	137	111	492	25

2.2 Survey Tools

Three tools were used to collect data:

1. **EGRA**
   This tool was developed by MOE's early grade supervisors in cooperation with in-field early grade teachers. It consisted of seven subtasks in reading: letter sounds, syllable sounds, invented words, reading comprehension and fluency with diacritics, listening comprehension, silent reading comprehension, and reading without diacritics.

2. **EGMA**
   This tool was developed by MOE's early grade supervisors in cooperation with in-field early grade teachers. It consisted of six subtasks in mathematics: number identification, number comparison, addition and subtraction L1, addition and subtraction L2, and word problems.

3. **Student Questionnaire**
   The student questionnaire was developed by MOE's early grade supervisors in coordination with the RAMP team. It consisted of a set of items that reveal some learning behaviors of students, particularly during distance learning.

2.3 National survey implementation procedures

1. Developing the survey tools by MOE supervisors and early grade teachers in cooperation with the concerned parties in RAMP
2. Reviewing the reading and mathematics measurement tools developed by MOE supervisors and early grade teachers in cooperation with the concerned parties in RAMP
3. Training assessors on student assessment methodologies
4. Piloting in a group of schools in Amman
5. Collecting the data (electronically) of the sampled schools within two weeks
6. Analyzing data, extracting and presenting the results to the MOE steering committee, and drafting the final report

3. Results

Overall, compared between 2019 and 2021, the results from this survey tend to show a similar performance in reading skills; however, the findings point at greater concerns about reduced skill proficiency in mathematics.

3.1 EGRA results

3.1.1 Reading results—basic sample (accuracy and fluency)

The following table summarizes the students' EGRA fluency results (number of correct items per minute) for G2 and G3 in 2019 and 2021. There is a noticeable decline in most of tasks with clear statistical significance except in ORF for G2 students, in which the percentage of decline in fluency was not statistically significant. For G3 students, the decrease was statistically significant in the letter sounds task only.

Table 12. G2 and G3 students' EGRA fluency results by year, grade, and basic sample

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Letter sounds	**Fluency (# of correct letters per min.)**	49.4	38*	55.6	48.2*
Syllable sounds	**Fluency (# of correct syllables per min.)**	29.7	23.4*	37.2	33.7
Invented words	**Fluency (# of correct words per min.)**	13.1	10.1*	17.4	15.3
Oral reading	**ORF**	20	16.5	34.9	32.3
Reading without diacritics	**Fluency (# of correct letters per min.)**		14.5		32.9

*** Statistically significant at 0.05 when comparing G2 (2019 vs. 2021); G3 (2019 vs. 2021)**

Table 13 shows G2 and G3 students' EGRA accuracy results (percentage of correct items in the reading comprehension task) in 2019 and 202. There is a noticeable increase among students in both grades while there is a statically significant decline for both grades as well.

Table 13. G2 and G3 students' EGRA accuracy results in 2019 and 2021

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Letter sounds	% correct items attempted	80.9%	79.1%	82.2%	83%
Syllable sounds	% correct items attempted	67.9%	68.3%	75.5%	77%
Invented words	% correct items attempted	54.3%	53.7%	59.8%	60.6%
Listening comprehension	% correct answers	53.5%	50.8%	64.4%	60.8%
Oral reading	% correct items attempted	52.4%	46.9%	68.4%	66.2%
Reading comprehension	% correct items attempted	41.4%	50.6%*	60.5%	70.6%*
	% correct answers	29%	26.5%	50.7%	54.9%
	% students with 80% reading comprehension	14.4%	10.7%	34.1%	39.4%
Silent reading comprehension	% correct answers	55.1%	39.5%*	82%	61.7%*
	% students 80% comprehension	45.1%	12.9%*	76.9%	43.8%*
Reading without diacritics	% correct items attempted		56.4%		76.5%

*** Statistically significant at 0.05 when comparing G2 (2019 vs. 2021); G3 (2019 vs. 2021)**

The following table displays the results of zero scores (students who could not read a single word correctly). We notice a decline in the zero scores—i.e., an improvement, a decrease in the number of students who failed to read a single word correctly. This decline is seen in all mentioned tasks except for ORF for both grades, along with reading comprehension and silent reading comprehension task for G3.

Table 14. G2 and G3 students' EGRA zero scores in 2019 and 2021

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Letter sounds	**% of students obtained zero scores**	5.7%	4.1%	7%	2.1%
Syllable sounds	**% of students obtained zero scores**	12%	6%	4.5%	2.1%
Invented words	**% of students obtained zero scores**	13.2%	8.7%	4.8%	5.6%
Listening comprehension	**% of students obtained zero scores**	9.7%	10.4%	2.9%	4.1%
ORF	**% of students obtained zero scores**	21.8%	21.3%	7.5%	7.5%
Reading comprehension	**% of students obtained zero scores**	43.7%	42.1%	19.6%	14.3%
Silent reading comprehension	**% of students obtained zero scores**	23.3%	13.8%	4.1%	5.6%
Reading without diacritics	**% of students obtained zero scores**		15.8%		5.3%

3.1.2 Basic sample EGRA results by gender

The following table shows the EGRA fluency results by gender. We notice a statistically significant decline in the results of G2 male students in letter sounds and syllable sounds while we notice a statistically significant decline in the fluency results of G2 female students in letter sounds, syllable sounds, and invented words. For G3 male and female students alike, there is a statistically insignificant decrease in the fluency results of all tasks.

Table 15. G2 and G3 students' EGRA fluency results in 2019 and 2021 by gender

Subtask	Indicator	G2 2019 M n= 390	G2 2021 M n= 444	G2 2019 F n= 561	G2 2021 F n= 496	G3 2019 M n= 396	G3 2021 M n= 407	G3 2019 F n= 569	G3 2021 F n= 552
Letter sounds	Fluency (# of correct letters per min.)	48.1	36 *	50.8	40*	54.8	46.9*	56.4	49.2*
Syllable sounds	Fluency (# of correct syllables per min.	27.5	22.4*	32.1	24.4*	35.7	32.2	38.7	34.9

Subtask	Indicator	G2 2019 M n= 390	G2 2021 M n= 444	G2 2019 F n= 561	G2 2021 F n= 496	G3 2019 M n= 396	G3 2021 M n= 407	G3 2019 F n= 569	G3 2021 F n= 552
Invented words	Fluency (# of correct words per min.)	12	9.7	14.2	10.5*	17	14.6	17.8	15.9
Oral reading	ORF	17.8	15.3	22.3	17.6	33.9	30	35.9	34.2
Reading without diacritics	Fluency (# of correct letters per min.)		13.1		15.8		30.1		35.2

*** Statistically significant at 0.05 comparing G2 males (2019 vs. 2021); G2 females (2019 vs. 2021); G3 males (2019 vs. 2021); G3 females (2019 vs. 2021)**

The table below shows the G2 and G3 results of EGRA accuracy in the two surveys by gender. The percentage of correct attempts in the reading comprehension task by G2 male students increased while there was a decrease among G2 male students in the remainder of the tasks. The decline was worrisome in terms of the percentage of students who had an 80% understanding in the silent reading comprehension task. Among G2 female students, on the other hand, there was an increase in the percentage of correct attempts in syllable sounds and reading comprehension, while there was a decrease in the remainder of the tasks. The decline was worrisome in terms of the percentage of females who had an 80% understanding in the silent reading comprehension task. As for G3, the results of male students also increased in terms of the percentage of correct attempts in syllable sounds, invented words, and in all reading comprehension indicators while their results decreased in the remainder of the tasks. As for G3 females, their percentages of correct attempts in syllable sounds and reading comprehension increased.

Table 16. The 2019 and 2021 G2 and G3 EGRA accuracy results by gender

Subtask	Indicator	G2 2019 M n= 390	G2 2021 M n= 444	G2 2019 F n= 561	G2 2021 F n= 496	G3 2019 M n= 396	G3 2021M n= 407	G3 2019 F n= 569	G3 2021 F n= 552
Letter sounds	**% correct items attempted**	80.5	77.9	81.4	80.2	82.5	82.8	82	83.2
Syllable sounds	**% correct items attempted**	66.4	66.4	69.4	70.1	73	77	77.8	77.1
Invented words	**% correct items attempted**	51.9	51.9	56.9	55.5	59	60.3	60.6	60.8
Listening comprehension	**% correct answers**	52.9	50.7	54.1	51	64	61	64.8	60.7
Oral reading	**% correct items attempted**	48.9	44.5	56	49.1	67.5	64.2	69.2	67.9

Subtask	Indicator	G2 2019 M n= 390	G2 2021 M n= 444	G2 2019 F n= 561	G2 2021 F n= 496	G3 2019 M n= 396	G3 2021M n= 407	G3 2019 F n= 569	G3 2021 F n= 552
Reading comprehension	% correct items attempted	40.5	47.7	42.3	53.5	60.8	69.7	60.3	71.4
	% correct answers	26.7	24.5	31.4	28.3	48.8	50.8	52.6	58.2
	% students with 80% reading comprehension	12.2	9.1	16.9	12.2	30.9	32.8	37.2	44.8
Silent reading comprehension	% correct items attempted	53	37.8	57.4	41.2	79.6	58.5	84.3	64.2
	% correct answers	53	37.8	57.4	41.2	79.6	58.5	84.3	64.2
	% students with 80% reading comprehension	41.5	9.9*	48.8	15.9*	72.6	38.3	81	48.2
Reading without diacritics	% correct items attempted		53.8		58.9		74.7		78

*** Statistically significant at 0.05 comparing G2 males (2019 vs. 2021); G2 females (2019 vs. 2021); G3 males (2019 vs. 2021); G3 females (2019 vs. 2021)**

As for zero scores by gender, we notice a decrease among G2 males in all tasks except for listening comprehension and reading comprehension, in which the zero scores increased. On the other hand, the zero scores of G2 females decreased in all tasks except for listening comprehension and ORF, in which the zero scores increased. As for G3, the zero scores of males decreased in all tasks except for listening comprehension and silent reading comprehension, in which the zero scores increased. Finally, among G3 females, the zero scores increased in all tasks except for letter sounds, syllable sounds, and reading comprehension.

Table 17. The 2019 and 2021 G2 and G3 EGRA zero scores by gender

Subtask	Indicator	G2 2019 M n= 390	G2 2021 M n= 444	G2 2019 F n= 561	G2 2021 F n= 496	G3 2019 M n= 396	G3 2021 M n= 407	G3 2019 F n= 569	G3 2021 F n= 552
Letter sounds	% zero scores	5.3	3.5	6.1	4.7	7.2	2.2	6.9	2.1
Syllable sounds	% zero scores	13.1	7.1	10.8	4.9*	6	1.8*	3.1	2.2
Invented words	% zero scores	15.4	10.2	10.9	7.2	6.9	5.8	2.8	5.4
Listening comprehension	% zero scores	8.4	9.5	11	11.3	2.2	2.7	3.5	5.3
Oral reading	% zero scores	24.8	23.1	18.7	19.5	7.1	6.8	7.8	8.2
Reading comprehension	% zero scores	46.2	46.6	41.1	37.8	20.1	16	19.2	13

Subtask	Indicator	G2 2019 M n= 390	G2 2021 M n= 444	G2 2019 F n= 561	G2 2021 F n= 496	G3 2019 M n= 396	G3 2021 M n= 407	G3 2019 F n= 569	G3 2021 F n= 552
Silent reading comprehension	% zero scores	22.3	13.4*	24.4	14.1*	5.2	5.7	3.1	5.4
Reading without diacritics	% zero scores		18.4		13.3		5.5		5.1

*** Statistically significant at 0.05 comparing G2 males (2019 vs. 2021); G2 females (2019 vs. 2021); G3 males (2019 vs. 2021); G3 females (2019 vs. 2021)**

3.1.3 The EGRA results of Syrian students outside the refugee camps

The table below shows the Syrian students' EGRA fluency results. We notice a decrease in fluency among G2 students in letter sounds and invented words with clear statistical significance while the decrease in the rest of the tasks was not statistically significant. We also notice a decrease in fluency among G3 students in all tasks, but that decline is not statistically significant.

Table 18. The 2019 and 2021 G2 and G3 Syrian students' EGRA fluency results

Subtask	Indicator	G2 2019 n= 80	G2 2021 n= 74	G3 2019 n= 79	G3 2021 n= 79
Letter sounds	Fluency (# of correct letters per min.)	62.7	32.4*	57.7	42.9
Syllable sounds	Fluency (# of correct syllables per	39.3	20.2	43	31.7
Invented words	Fluency (# of correct words per min.)	18.7	8.5*	21.8	14.6
Oral reading	ORF	27.6	13.9	41.3	31.2

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

The table below, which presents the 2019 and 2021 G2 and G3 Syrian students' accuracy results, shows that the performance of G2 students decreased in all indicators for all tasks. As for G3, their results increased in all indicators for reading comprehension and decreased in the remainder of the tasks. The most alarming declines among G2 students were in reading comprehension. There was a considerable drop in the proportion of students who achieved 80%—or more—in reading comprehension.

Table 19. The 2019 and 2021 G2 and G3 Syrian students' EGRA accuracy results

Subtask	Indicator	G2 2019 n= 80	G2 2021 n= 74	G3 2019 n= 79	G3 2021 n= 79
Letter sounds	**% correct items attempted**	86.8	73.2	83.8	75.7

Subtask	Indicator	G2 2019 n= 80	G2 2021 n= 74	G3 2019 n= 79	G3 2021 n= 79
Syllable sounds	**% correct items attempted**	75.1	62.7	78.3	74
Invented words	**% correct items attempted**	64.5	47.7	66	56
Listening comprehension	**% correct answers**	70.9	45.8	66.1	60.4
Oral reading	**% correct items attempted**	62	38.7	75.4	61.9
Reading comprehension	**% correct items attempted**	54.6	40.9	63.5	74.5
	% correct answers	44.2	22.1	56.8	57.9
	% students with 80% reading comprehension	30.1	7.2	39.7	43.9
Silent reading comprehension	**% correct items attempted**	71	31.7	87.6	68.2
	% correct answers	71	31.7	87.6	68.2
	% students with 80% reading	66.5	6.8	85.1	55.7
Reading without diacritics	**% correct items attempted**		47.8		75.1

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

As for the 2019 and 2021 G2 and G3 Syrian students' EGRA zero scores, they are displayed in the table below. We notice an increase among G2 in letter sounds, listening comprehension, oral reading, and silent reading comprehension while there was a decrease in syllable sounds and invented words. As for G3, we notice an increase in invented words, listening comprehension, oral reading, and silent reading comprehension along with a decrease in letter sounds, syllable sounds, invented words, and reading comprehension.

Table 20. G2 and G3 Syrian students' EGRA zero scores in 2019 and 2021

Subtask	Indicator	G2 2019 n= 80	G2 2021 n= 74	G3 2019 n= 79	G3 2021 n= 79
Letter sounds	% zero scores	5.1	9.7	7	4.3
Syllable sounds	% zero scores	10.9	9.6	6.4	1.5
Invented words	% zero scores	11.2	10.1	1.7	6
Listening comprehension	% zero scores	8.3	14.8	3.5	7.2

Subtask	Indicator	G2 2019 n= 80	G2 2021 n= 74	G3 2019 n= 79	G3 2021 n= 79
Oral reading	% zero scores	18.6	26.1	3.5	6.3
Reading comprehension	% zero scores	32.6	51.6	14.3	11
Silent reading comprehension	% zero scores	16.1	17.3	2.2	6.6
Reading without diacritics	% zero scores		28.8		6.2

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

3.1.4 EGRA results of the sampled Syrian students from inside the refugee camps

The table below shows the 2019 and 2021 EGRA fluency results of G2 and G3 refugee camp students. Fluency is defined as the number of correct answers per minute. We notice a statistically insignificant decrease among G2 and G3 students in all tasks.

Table 21. The 2019 and 2021 EGRA fluency results of G2 and G3 refugee camp students

Subtask	Indicator	G2 2019 n= 82	G2 2021 n= 80	G3 2019 n= 78	G3 2021 n= 78
Letter sounds	Fluency (# of correct letters per min.)	23.8	22.1	32.1	33.5
Syllable sounds	Fluency (# of correct syllables per min.)	12.5	8.2	20.8	18.9
Invented words	Fluency (# of correct words per min.)	5	3.7	10.1	8.4
Oral reading	ORF	7.1	5.1	20.3	16.3
Reading without diacritics	Fluency (# of correct letters per min.)		6.5		18.3

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

The table below shows the 2019 and 2021 EGRA accuracy results of G2 and G3 refugee camp students. Among G2 students, the results showed an increase in letter sounds, listening comprehension, and reading comprehension while there was consistency in syllable sounds and silent reading comprehension. As for G3, the results showed an increase in letter sounds, listening comprehension, and the proportion of students with 80% reading comprehension; consistency in invented words; and a statistically significant decrease in all silent reading comprehension indicators.

Table 22. The 2019 and 2021 G2 and G3 refugee students' EGRA accuracy results

Subtask	Indicator	G2 2019 n= 82	G2 2021 n= 80	G3 2019 n= 78	G3 2021 n= 78
Letter sounds	**% correct items attempted**	48.9	57.1	56.5	69.2
Syllable sounds	**% correct items attempted**	35.2	35	50.2	54.2
Invented words	**% correct items attempted**	25.8	23.9	40.4	40.7
Listening comprehension	**% correct answers**	39.9	45.8	54.1	53.3
Oral reading	**% correct items attempted**	20.7	14.9	43.1	38.8
Reading comprehension	**% correct items attempted**	10.1	24.6*	43	52.7
	% correct answers	7.3	10.3	32.2	29.8
	% students with 80% reading	5.5	4.1	14.2	15.9
Silent reading comprehension	**% correct items attempted**	21.9	21.5	68	41.7*
	% correct answers	21.9	21.5	68	41.7*
	% students with 80% reading	14.5	6.4	59.4	26.3*
Reading without diacritics	**% correct items attempted**		27.9		53

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

The table below shows G2 and G3 EGRA zero scores results in the 2019 and 2021 surveys for students in refugee camps. We notice a decrease in the zero scores of G2 students in all tasks except for ORF, in which there was a slight increase. There was also an increase in G3 zero scores in ORF, reading comprehension, and silent reading comprehension. On the other hand, G3 zero scores decreased in letter sounds, syllable sounds, invented words, and listening comprehension tasks.

Table 23. G2 and G3 EGRA zero scores results in the 2019 and 2021 surveys in refugee camps

Subtask	Indicator	G2 2019 n= 82	G2 2021 n= 80	G3 2019 n= 78	G3 2021 n= 78
Letter sounds	**% zero score**	26.5	15.5	22.8	13.3
Syllable sounds	**% zero score**	39.6	33.9	23.2	18.4
Invented words	**% zero score**	51.4	43	28.6	22
Listening comprehension	**% zero score**	19.9	9.4*	11.1	10.6
Oral reading	**% zero score**	64.9	69.4	29.9	35.2
Reading comprehension	**% zero score**	84.8	70.1	39.6	41.3
Silent reading comprehension	**% zero score**	57.6	38.9	12.7	25.1
Silent reading comprehension	**% zero score**		53.7		34.4

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

3.1.5 EGRA results of students in the UNICEF program

Table 24 below shows G2 and G3 EGRA fluency results in the 2019 and 2021 surveys for students in the UNICEF program. Fluency is defined as the number of correct answers per minute. In all tasks, we notice a statistically insignificant decrease in fluency among G2 and G3 students.

Table 24. G2 and G3 EGRA fluency results in the 2019 and 2021 surveys at schools implementing the UNICEF program

Subtask	Indicator	G2 2019 n= 90	G2 2021 n= 90	G3 2019 n= 90	G3 2021 n= 91
Letter sounds	**Fluency (# of correct letters per min.)**	45	39.9	56.8	48.8
Syllable sounds	**Fluency (# of correct syllables per min.)**	28.5	22.9	29.4	33.6
Invented words	**Fluency (# of correct words per min.)**	12.4	9.8	14.1	15
Oral reading	**Oral reading fluency**	20.4	15.7	29.2	32
Reading without diacritics	**Fluency (# of correct letters per min.)**		14.3		29.4

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

The table below shows G2 and G3 EGRA accuracy results in the 2019 and 2021 surveys for students in the UNICEF program. The G2 percent of correct items attempted results increased in syllable sounds and reading comprehension tasks, while the results were consistent in the invented words task. There was also a worryingly, statistically significant decrease in the percentage of students with 80% reading comprehension. The G3 percent of correct items attempted results increased in syllable sounds, oral reading fluency, and reading comprehension tasks, while there was a statically significant decrease in the silent reading comprehension task in terms of the percentages of correct item attempted and correct answers.

Table 25. G2 and G3 EGRA accuracy results in the 2019 and 2021 surveys at schools implementing the UNICEF program

Subtask	Indicator	G2 2019 n= 90	G2 2021 n= 90	G3 2019 n= 90	G3 2021 n= 91
Letter sounds	**% correct items attempted**	78.1	76.3	86.2	82.1
Syllable sounds	**% correct items attempted**	65.7	67.2	67.8	78.3
Invented words	**% correct items attempted**	52	52.7	55	62.6
Listening comprehension	**% correct answers**	57.5	55.6	63.1	61.9
Oral reading	**% correct items attempted**	50.3	42.9	66.8	71.1
Reading comprehension	**% correct items attempted**	46.7	49.7	69.8	74.2
	% correct answers	34.6	25.7	49.8	52.7
	% students with 80% reading	19.7	8.9	28.1	26.8
Silent reading comprehension	**% correct items attempted**	65	40.1	79.8	53.5*
	% correct answers	65	40.1	79.8	53.5*
	% students with 80% reading	53.1	12.8*	68.5	32.5
Reading without diacritics	**% correct items attempted**		52.4		78.9

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

Table 26 below shows G2 and G3 EGRA zero scores results in the 2019 and 2021 surveys for students at the schools implementing the UNICEF program. We notice an increase in the zero scores of G2 students in all tasks except for syllable sounds and ORF tasks where there was a slight increase. There was also a decrease in G3 zero scores in all tasks except for letter sounds and silent reading comprehension tasks where there was a slight increase.

Table 26. G2 and G3 EGRA zero scores in the 2019 and 2021 surveys at schools implementing the UNICEF program

Subtask	Indicator	G2 2019 n= 90	G2 2021 n= 90	G3 2019 n= 90	G3 2021 n= 91
Letter sounds	% zero score	2.8	7.8	2	1.8
Syllable sounds	% zero score	10.8	7.7	6.2	1
Invented words	% zero score	6.5	8.5	1.6	2
Listening comprehension	% zero score	2.3	13.7*	6.2	.50
Oral reading	% zero score	26.6	23.3	2.7	2.7
Reading comprehension	% zero score	40.4	41.8	13.1	4.5
Silent reading comprehension	% zero score	12.6	17.6	1	10.1
Silent reading comprehension	% zero score		17.4		2.2

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

3.2 EGMA Results

3.2.1 Mathematics results — Basic sample (accuracy and fluency)

Table 27 summarizes the mathematics (EGRA) fluency results for G2 and G3 in 2019 and 2021. The table shows a statistically significant slight decrease in mathematics skills fluency.

Table 27. G2 and G3 students' EGMA fluency results in 2019 and 2021

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Number identification	Fluency (# of correct items per min.)	35*	29.7*	47.8*	39.9
Addition L1	Fluency (# of correct items per min.)	11.9*	10.2	14.4*	12.7
Subtraction L1	Fluency (# of correct items per min.)	9.6*	7	11.4*	9.9

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

As for G2 and G3 EGMA accuracy results in 2019 and 2021, they are shown in the table below. There is a significant decrease in accuracy among G2 and G3 students in addition and subtraction levels 1 and 2 and missing number.

Table 28. G2 and G3 students' EGMA accuracy results in 2019 and 2021

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Number identification	**% correct items attempted**	89%	86.2%	95.5%	93.8%
Quantitative comparison	**% correct answers**	81.2%	85.4%	90.6%	91.1%
Addition and subtraction L1	**% correct answers**	53.2%	42.5%	62.6%*	55.5%
Addition and subtraction L2	**% correct answers**	47.6%*	29%	59.9%*	46.9%
Missing number	**% correct answers**	56.2%*	44.6%	72.8%*	63.9%
Word problems	**% correct answers**	56.8%	53.4%	71.5%	71.1%

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

As for the G2 and G3 zero scores in EGRA, they are shown in ***Table 29*** below. For G2, we notice an increase in zero scores in two tasks: number identification and addition and subtraction level 1. As for G3, there was also an increase in addition and subtraction level 2, missing number, and word problems.

Table 29. G2 and G3 EGMA zero scores in 2019 and 2021

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Number identification	**Zero score**	**0.1**	**0**	**0.1**	**0**
Quantitative comparison	**Zero score**	**1.5**	**0.7**	**0.1**	**0.1**
Addition and subtraction L1	**Zero score**	**1.9**	**2.8**	**0.7**	**1**

Subtask	Indicator	G2 2019 (n=951)	G2 2021 (n=940)	G3 2019 (n=965)	G3 2021 (n=959)
Addition and subtraction L2	**Zero score**	**11.1**	**17.2**	**3.4**	**6.8**
Missing number	**Zero score**	**6**	**5.3**	**0.8**	**1.8**
Word problems	**Zero score**	**8**	**7.2**	**2.9**	**2.5**

3.2.2 Basic sample EGMA results by gender

Table 30 below shows G2 and G3 EGMA fluency results in 2019 and 2021 by gender. Fluency is defined as the number of correct answers per minute. We notice a decrease in fluency among G2 male and female students in addition and subtraction level 1 and number identification tasks; however, the decrease is statistically significant among females only. We also notice a decrease in fluency among G3 male and female students in addition and subtraction level 1 and number identification tasks; and the decrease is significantly significant among both males and females except for the level-one addition task in which the decrease is not statistically significant among males.

Table 30. G2 and G3 EGMA fluency results in 2019 and 2021 by gender

Subtask	Indicator	G2 2019 M n= 390	G2 2021 M n= 444	G2 2019 F n= 561	G2 2021 F n= 496	G3 2019 M n= 396	G3 2021 M n= 407	G3 2019 F n= 569	G3 2021 F n= 552
Number	Fluency (correct items per	35.3	33.8	34.6	25.8	49.8	42.9	45.8	37.5
Addition L1	Fluency (correct items per	12.2	11.3	11.6	9.2*	14.7	13.7	14	11.9
Subtraction L1	Fluency (correct items per	9.7	7.6*	9.5	6.3*	11.9	10.6	11	9.4*

*** Statistically significant at 0.05 comparing G2 males (2019 vs. 2021); G2 females (2019 vs. 2021); G3 males (2019 vs. 2021); G3 females (2019 vs. 2021)**

Table 31 below shows G2 and G3 EGMA accuracy results in 2019 and 2021 by gender. There is a noticeable and statistically significant decrease in accuracy results among G2 and G3 male and female students in missing number and addition and subtraction levels 1 and 2 tasks. In qualitative comparison task, however, there was a slight increase in the accuracy results among G2 and G3 male and female students. Additionally, the accuracy of G3 male students increased in the word problem task.

Table 31. G2 and G3 EGMA accuracy results in 2019 and 2021 by gender

Subtask	Indicator	G2 2019 M n= 390	G2 2021 M n= 444	G2 2019 F n= 561	G2 2021 F n= 496	G3 2019 M n= 396	G3 2021 M n= 407	G3 2019 F n= 569	G3 2021 F n= 552
Number identification	%correct items attempted	89.3	88.6	88.8	83.9*	96.3	95.7	94.8	92.3
Quantitative comparison	%correct answers	82	88.3*	80.3	82.5	93.1	93.3	88.2	89.4
Addition and subtraction L1	%correct answers	53.9	46.5*	52.4	38.7*	64.3	58.8*	61	52.8*
Addition and subtraction L2	%correct answers	49.4	33.5*	45.6	24.7*	62.6	48.7*	56.8	45.5*
Missing number	%correct answers	58.3	48.9*	54.1	40.4*	76.9	67.2*	68.8	61.3*
Word problems	%correct answers	60.7	57.5	52.7	49.5	75.8	76.5	67.3	66.8

*** Statistically significant at 0.05 comparing G2 males (2019 vs. 2021); G2 females (2019 vs. 2021); G3 males (2019 vs. 2021); G3 females (2019 vs. 2021)**

Table 32 below shows G2 and G3 EGMA zero scores in 2019 and 2021 by gender. There is a decrease in zero scores among G2 male students in missing number, quantitative comparison, and world problems tasks. Among G2 females, however, we notice an increase in zero scores in word problems and addition and subtraction levels 1 and 2 tasks; and a decrease in number identification and missing number tasks. As for G3, we notice an increase in zero scores among male students in quantitative comparison, addition and subtraction level 2, and missing number tasks, along with a decrease in number identification task. Among G3 females, the zero scores increased in missing number and addition and subtraction levels 1 and 2 and decreased in word problems.

Table 32. G2 and G3 EGMA zero scores in 2019 and 2021 by gender

Subtask	Indicator	G2 2019 M n= 390	G2 2021 M n= 444	G2 2019 F n= 561	G2 2021 F n= 496	G3 2019 M n= 396	G3 2021 M n= 407	G3 2019 F n= 569	G3 2021 F n= 552
Number identification	**% zero score**	0	0.1	0.1	0	0.2	0	0	0
Quantitative comparison	**% zero score**	2.2	0.6*	0.8	0.8	0	0.1	0.2	0.1
Addition and subtraction L1	**% zero score**	1.5	2.7	2.3	2.9	1.2	1.1	0.2	0.8

Subtask	Indicator	G2 2019 M n= 390	G2 2021 M n= 444	G2 2019 F n= 561	G2 2021 F n= 496	G3 2019 M n= 396	G3 2021 M n= 407	G3 2019 F n= 569	G3 2021 F n= 552
Addition and subtraction L2	**% zero score**	10.8	14.4	11.4	19.8	3.7	6.1	3.2	7.4*
Missing number	**% zero score**	7.2	6.5	4.8	4.1	0.4	1.8*	1.2	1.7
Word problems	**% zero score**	8.6	5.2	7.5	9.2	0.9	0.9	4.9	3.8

*** Statistically significant at 0.05 comparing G2 males (2019 vs. 2021); G2 females (2019 vs. 2021); G3 males (2019 vs. 2021); G3 females (2019 vs. 2021)**

3.2.3 EGMA results of sampled Syrian students from outside the refugee camps

The following table shows the Syrian students' EGMA fluency results. We notice a decrease in fluency among G2 and G3 students in number identification and addition and subtraction L1 with a noticeable statistical significance.

Table 33. G2 and G3 Syrian students' EGMA fluency results in 2019 and 2021

Subtask	Indicator	G2 2019 n= 80	G2 2021 n= 74	G3 2019 n= 79	G3 2021 n= 79
Number	Fluency (correct items per min.)	46.8	29.1*	53.6	40
Addition L1	Fluency (correct items per min.)	16.2	10.4*	15.8	14.5
Subtraction L1	Fluency (correct items per min.)	13.3	6.6*	12.4	10.7*

*** Statistically significant at 0.05 comparing G2 males (2019 vs. 2021); G2 females (2019 vs. 2021); G3 males (2019 vs. 2021); G3 females (2019 vs. 2021)**

While the decline in accuracy among students of both grades was noticeable in all tasks, it was statistically significant among G2 students in all tasks except for quantitative comparison. As for G3, the decline was statistically significant in addition and subtractions levels 2 and 2.

Table 34. G2 and G3 Syrian students' EGMA accuracy results in 2019 and 2021

Subtask	Indicator	G2 2019 n= 80	G2 2021 n= 74	G3 2019 n= 79	G3 2021 n= 79
Number identification	%correct items attempted	96.7	88.4*	98.2	92.2
Quantitative comparison	%correct answers	94.2	89.9	93.1	91.4
Addition and subtraction L1	%correct answers	69	42.5*	68.9	61.3*
Addition and subtraction L2	%correct answers	66.8	29.1*	70.3	56.3*
Missing number	%correct answers	77.4	45.6*	83.3	70.7
Word problems	%correct answers	76.6	52.4*	82.6	76.4

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

We notice an increase in zero scores among G2 and G3 students in all tasks expect for the G2 missing number task and G3 addition and subtraction level 1 task—the zero scores percentage in both tasks remained consistent.

Table 35. G2 and G3 Syrian students' EGMA zero scores in 2019 and 2021

Subtask	Indicator	G2 2019	G2 2021	G3 2019	G3 2021
Number identification	**% zero score**	0	1	0	2.7
Quantitative comparison	**% zero score**	0.1	1	0	0.7
Addition and subtraction L1	**% zero score**	0.3	1	0	0
Addition and subtraction L2	**% zero score**	3.3	12.4	0	4.1
Missing number	**% zero score**	2.6	2.6	0	1.5*
Word problems	**% zero score**	1.7	7.5	1.2	4.1

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

3.2.4 EGMA results of sampled Syrian students from inside the refugee camps

The table below shows the EGMA fluency results of the refugee camp G2 and G3 students. We notice a slight decrease in fluency among G2 and G3 students in number identification and addition and subtraction level 1.

Table 36. G2 and G3 refugee camp students' EGMA fluency results in 2019 and 2021

Subtask	Indicator	G2 2019 n= 82	G2 2021 n= 80	G3 2019 n= 78	G3 2021 n= 78
Number identification	Fluency (correct items per min.)	24.7	21	40.6	30.7
Addition L1	Fluency (correct items per min.)	9	8.5	12.3	11
Subtraction L1	Fluency (correct items per min.)	6.7	5.2	9.3	8.1

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

The table below shows refugee camp students' EGMA accuracy results in both surveys. There was a noticeable decrease among G2 students in all tasks except for word problems, in which the students' accuracy increased. There was also noticeable decrease among G3 students in all tasks except for quantitative comparison, in which students' accuracy increased.

Table 37. G2 and G3 refugee camp students' EGMA accuracy results in 2019 and 2021

Subtask	Indicator	G2 2019 n= 82	G2 2021 n= 80	G3 2019 n= 78	G3 2021 n= 78
Number identification	%correct items attempted	77.2	74	90.1	83.8
Quantitative comparison	%correct answers	68.7	78.8*	81.3	86
Addition and subtraction L1	%correct answers	39.1	34	52.7	47.3
Addition and subtraction L2	%correct answers	25.9	16.9*	41.2	27.8*
Missing number	%correct answers	40.5	32.7	58.7	47.6
Word problems	%correct answers	40.4	44	59.2	58.3

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

The table below shows the EGMA zero scores of G2 and G3 refugee camp students in 2019 and 2021 surveys. We notice an increase of zero scores among G2 students in number identification, addition and subtraction levels 1 and 2, and missing number while there was a decrease in quantitative comparison and word problems. As for G3, their zero scores increased in number identification, missing number, and addition and subtraction level 1; and they decreased in quantitative comparison, world problems, and addition and subtraction level 2.

Table 38. G2 and G3 refugee camp students' EGMA zero scores in 2019 and 2021

Subtask	Indicator	G2 2019 n= 82	G2 2021 n= 80	G3 2019 n= 78	G3 2021 n= 78
Number identification	**% zero score**	0.9	2.6	0	1
Quantitative comparison	**% zero score**	3.5	0.9	1.3	1
Addition and subtraction L1	**% zero score**	6.5	9.2	3.3	2.2
Addition and subtraction L2	**% zero score**	28.4	30.7	11.2	21.6
Missing number	**% zero score**	9.1	9.9	3.3	5.9
Word problems	**% zero score**	23.7	12.7	9.6	9.4

3.2.5 EGMA results of UNICEF program students

Table 39 below shows the EGRA fluency results of the UNICEF program students in the 2019 and 2021 surveys. Fluency is defined as the number of correct answers per minute. Among G2 and G3 student, we notice a slight decrease in fluency in number identification and subtraction level 1; and we notice a slight increase in addition level 1.

Table 39. UNICEF program G2 and G3 students EGMA fluency results in 2019 and 2021

Subtask	Indicator	G2 2019 n= 90	G2 2021 n= 90	G3 2019 n= 90	G3 2021 n= 91
Number identification	Fluency (correct items per min.)	32.7	26.6	43.9	40.6
Addition L1	Fluency (correct items per min.)	10.4	10.9	12.9	13
Subtraction L1	Fluency (correct items per min.)	9	7.8	10.4	10.4

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

Table 40 below shows G2 and G3 EGRA accuracy results in the 2019 and 2021 surveys for the UNICEF program students. The decrease in accuracy was noticeable among G2 students in all tasks except for quantitative comparison, in which the accuracy slightly increased. Among G3 students, the decrease was noticeable in all tasks except for quantitative comparison and missing number, in which students' accuracy slightly increased.

Table 40. UNICEF Program G2 and G3 students' EGMA accuracy results in 2019 and 2021

Subtask	Indicator	G2 2019 n=	G2 2021	G3 2019	G3 2021
Number identification	% correct items attempted	77.2	74	90.1	83.8
Quantitative comparison	% correct answers	68.7	78.8*	81.3	86
Addition and subtraction L1	% correct answers	39.1	34	52.7	47.3
Addition and subtraction L2	% correct answers	25.9	16.9*	41.2	27.8*
Missing number	% correct answers	40.5	32.7	58.7	47.6
Word problems	% correct answers	40.4	44	59.2	58.3

*** Statistically significant at 0.05 comparing G2 (2019 vs. 2021; G3 (2019 vs. 2021)**

The table below shows the EGMA zero scores of G2 and G3 UNICEF Program students in 2019 and 2021 surveys. We notice an increase of zero scores among G2 students in quantitative comparison and addition and subtraction level 2 while there was a decrease in number identification, word problems, and addition and subtraction level 1. As for G3, their zero scores increased in addition and subtraction level 2 while they decreased in addition and subtraction level 1, missing number, and word problems. No zero scores were registered among G3 students for the number identification and quantitative comparison tasks in 2019 or 2021.

Table 41. UNICEF Program G2 and G3 students' EGMA zero scores in 2019 and 2021

Subtask	Indicator	G2 2019 n= 90	G2 2021 n= 90	G3 2019 n= 90	G3 2021 n= 91
Number identification	**% zero score**	0.5	0	0	0
Quantitative comparison	**% zero score**	0.5	1.2	0	0
Addition and subtraction L1	**% zero score**	4.3	3.1	4	0
Addition and subtraction L2	**% zero score**	16.5	18.7	4.3	1
Missing number	**% zero score**	5.9	5.3	0.6	0
Word problems	**% zero score**	11.6	10.2	7.6	0.5

3.3 Key Performance Indicators Results

Generally, the main objective of the assessment is to identify the students' skills in reading and mathematics by measuring the RAMP key performance indicators results. Therefore, it was necessary—for a better understanding of the students' performance—to examine the results distributed among the most important indicators and subgroups. Eventually, four performance indicators have been selected, all of which represent the objectives of the primary educational

system in Jordan. The indicators, which will be presented separately for each grade (G2 and G3), are as follows:

- Reading Proficiency: The percentage of students who are able to answer correctly at least 80% of the reading comprehension questions upon reading a paragraph orally.
- Oral Reading Fluency (ORF) Benchmark: The percentage of students who meet or exceed the ORF benchmark of 46 correct words per minute.
- Silent Reading: The percentage of students who are able to answer correctly at least 80% of the reading comprehension questions in the silent reading task.
- Mathematics Proficiency: The percentage of students who are able to answer at least 80% of the addition and subtraction level 2 items and at least 70% of the missing number items.

3.3.1 Main sample's performance indicators result

Overall, compared between 2019 and 2021, the results show a lower performance level of G2 students while G3 students demonstrated a better performance. The results clearly indicate a low proficiency in mathematics, particularly among G2 students. There is also a statistically significant decline in the key indicators results of mathematics and silent reading comprehension, with relatively consistent results in reading comprehension and fluency indicators. What is interesting is the progress in the fluency and comprehension indicators of G3 although it is not statistically significant.

Table 42. 2019 and 2021 results of the RAMP key performance indictors

#	Indicator	2019	2021
1	*Percentage* ***of students who, by the end of G2, demonstrate reading fluency and comprehension of grade-level text***	14.4%	10.7%
2	*Percentage* ***of students who, by the end of G2, demonstrate silent reading comprehension of grade-level text***	45.1 %	12.9 %*
3	*Percentage* ***of students who, by the end of G2, demonstrate that they can do grade-level mathematics with understanding***	19.3%	6.1%*
4	*Percentage* ***of students who, by the end of G3, demonstrate reading fluency and comprehension of grade-level text***	34.1%	39.4%
5	*Percentage* ***of students who, by the end of G3, demonstrate silent reading comprehension of grade-level text***	76.9 %	43.8%*
6	*Percentage* ***of students who, by the end of G3, demonstrate that they can do grade-level mathematics with understanding***	30.7%	18.4%*
7	*Percentage* ***of students obtaining zero scores in ORF at the end of G2***	21.8%	21.3%

*** Statistically significant at 0.05**

The chart below compares between the results of 2019 and 2021

Figure 1. 2019 and 2021 G2 assessment results

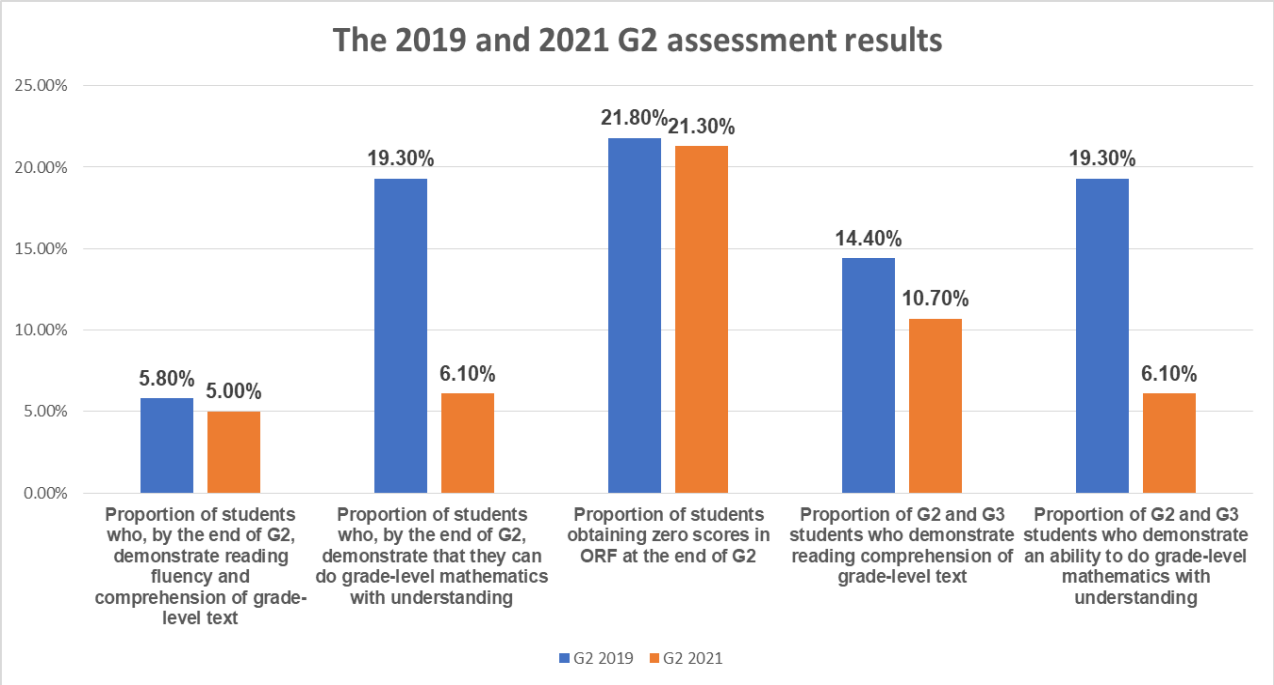
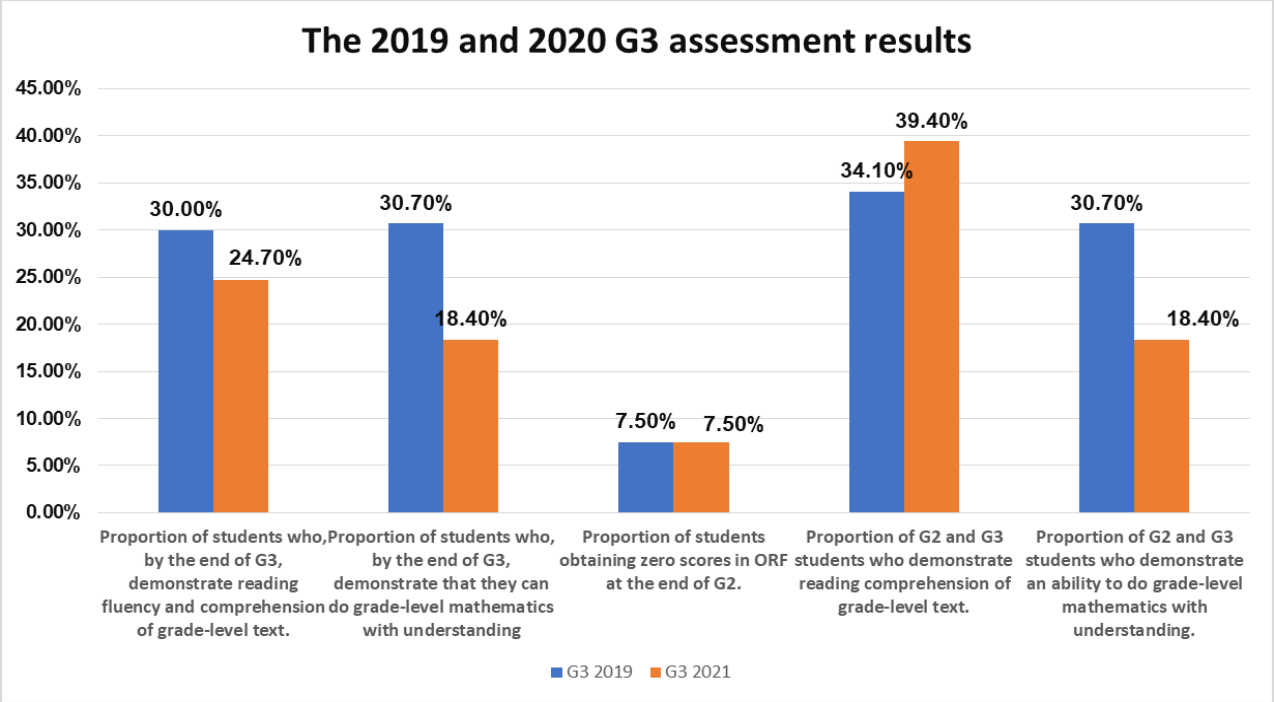


Figure 2. G3 assessment results for the years 2019 and 2021



3.3.2 Basic sample's performance indicator results by gender

As for G2, the female students demonstrated better reading skills in 2019 and 2021 while the male students remained the better performers in mathematics. ***Table 43*** shows that there is a statistically significant decrease in mathematics and silent reading among both males and females. However, among males and females alike, there were no statistically significant changes in reading.

As for the results by gender, the 2019 survey results showed that the G2 females had a better reading performance (16.9) than males (12.2) while the latter had a slightly better performance in mathematics. In 2021, the females had a better reading performance (12.2) than males (9.1) while in mathematics the males had a much better performance than females.

Table 43. A summary of G2 performance results by gender and year

Indicator	*2019*		2021	
	Males n= 390	*Females n= 561*	Males n= 444	Females n= 496
Reading proficiency	*12.2*	*16.9*	9.1	12.2
ORF benchmark	3.7	8.1	4.5	5.6
Silent reading	41.5	48.8	9.9	15.9
Mathematics proficiency	20.8	17.8	10.1	2.3

*** Statistically significant at 0.05**

As for G3, female students demonstrated a better performance in reading skills in 2019 and 2021 while male students still had a better performance in mathematics. ***Table 44*** shows that there is a statistically significant decline in students' performance in mathematics and silent reading among both males and females, while there are no statistically significant changes in reading for either gender. The 2019 survey results showed that the reading performance of females (37.2) was higher than that of males (30.9) who, on the other hand, demonstrated a slightly better performance in mathematics. However, in the 2021 survey, the reading performance of females (12.2) was higher than that of males (9.1), while the latter had a much better performance than females in mathematics.

Table 44. Percent of G3 males/females who achieved the indicated proficiency.

Indicator	*2019*		2021	
	Males n= 396	*Females n= 569*	*Males n= 407*	*Females n= 552*
Reading proficiency	30.9	37.2	32.8	44.8
ORF benchmark	27.2	32.6	20.5	28.1
Silent reading	72.6	81	38.3	48.2
Mathematics proficiency	36.4	25.2	21.2*	16.2*

*** Statistically significant at 0.05**

3.3.3 The indicator results of Syrian students

Table 45. Percent of Syrian students who achieved the indicated proficiency.

Indicator	*Grade 2*		*Grade 3*	
	2019 n= 80	*2021* n= 74	*2019* n= 79	*2021* n= 79
Reading proficiency	30.1	7.2	39.7	43.9
ORF benchmark	17.2	4.3	38.5	25.5
Silent reading	66.5	6.8*	85.1	55.7
Mathematics proficiency	49.8	7.5 *	45.5	25.5*

*** Statistically significant at 0.05**

3.3.4 The indicator results of refugee camp students

Table 46. Percent of refugee camp students' who achieved the indicated proficiency.

indicator	*Grade 2*		*Grade 3*	
	2019 n= 82	*2021* n= 80	*2019* n= 78	*2021* n= 78
Reading proficiency	5.5	4.1	14.2	15.9
ORF benchmark	1.7	0	13.9	8
Silent reading	14.5	4.1	59.4	26.3
Mathematics proficiency	3.9	1.1	10.1	1.8

*** Statistically significant at 0.05**

3.3.5 The indicator results by school type

Table 47. 2021 G2 performance summary by school type. Percent of students who achieved the indicated proficiency.

Indicator	Regular schools n= 940	Camp schools n= 80	Syrian schools n= 74	UNICEF schools n= 90
Reading proficiency	10.7	4.1	7.2	8.9
ORF benchmark	5	0	4.3	5.4
Silent reading	12.9	4.1	7.2	12.8
Mathematics proficiency	6.1	1.1	7.5	.7

Table 48. 2021 G3 performance summary by school type. Percent of students who achieved the indicated proficiency.

Indicator	Regular schools n= 959	Camp schools n= 79	Syrian schools n= 78	UNICEF schools n= 91
Reading proficiency	39.4	15.9	43.9	26.8
ORF benchmark	24.7	8	25.5	14.8
Silent reading	43.8	26.3	55.7	32.5
Mathematics proficiency	18.4	1.8	25.5	21.2

3.4 Students' main characteristics

In this section, we explore the correlations between the students' various learning experiences and their impact on the achieved outcomes.

3.4.1 The correlation between mothers reading to their children and the average performance in reading and mathematics

Table 49 below shows the 2021 EGRA and EGMA G2 and G3 results with the mother's role considered. We notice that the average performance in ORF for G2 students who had not been assisted by their mothers was low and with statistical significance.

Table 49. The 2021 EGRA and EGMA G2 and G3 results with the mother's role considered

Does your Mother read to you at home?	Total students		ORF		Reading with comprehension Yes RC>=80%: Row%		Mathematics with understanding Add+Sub Level2≥80% & Missnum≥70%: Row%	
	G2	G3	G2	G3	G2	G3	G2	G3
Yes	779	807	17.2	32.4	11.9%	40.0%	6.4%	19.0%
No	160	151	13.0	32.1	5.6%	36.7%	5.2%	15.6%
Total	939	958	16.5	32.3	10.7%	39.4%	6.1%	18.4%

3.4.2 The correlation between fathers reading to their children and the average performance in reading and mathematics

Table 50 below shows the 2021 EGRA and EGMA G2 and G3 results with the father's role considered. We notice that the average performance in ORF for G3 students who had been assisted by their fathers was high and with statistical significance.

Table 50. The 2021 EGRA and EGMA G2 and G3 results with the father's role considered

Does your Father read to you at home?	Total students		ORF		Reading with comprehension Yes RC>=80%: Row%		Mathematics with understanding Add+Sub Level2≥80% & Missnum≥70%: Row%	
	G2	G3	G2	G3	G2	G3	G2	G3
Yes	387	409	19.0	32.6	13.3%	40.2%	9.7%	18.3%
No	552	549	14.7	32.1	8.8%	38.8%	3.6%	18.6%
Total	939	958	16.5	32.3	10.7%	39.4%	6.1%	18.4%

3.4.3 The correlation between having internet access at home and the average performance in reading and mathematics

Table 51 below shows the 2021 EGRA and EGMA G2 and G3 results with internet availability considered. We notice that the average performance in ORF for G2 students who did not have access to internet was low and with medium statistical significance. We also notice that the mathematics average performance of G2 students who had internet access at home was high and with statistical significance.

Table 51. The 2021 EGRA and EGMA G2 and G3 results with internet availability considered

Do you have constant internet access at home?	Total students		ORF		Reading comprehension Yes RC>=80%: Row%		Doing mathematics with understanding Add+Sub Level2≥80% & Missnum≥70%: Row%	
	G2	G3	G2	G3	G2	G3	G2	G3
Yes	739	784	17.5	33.0	11.7%	40.6%	7.57%	19.5%
No	200	174	12.4	29.1	6.5%	34.3%	0.3%	13.6%
Total	939	958	16.5	32.3	10.7%	39.4%	6.1%	18.4%

3.4.4 The correlation between students' use of the distance learning platforms and the average performance in reading and mathematics

Table 52 below shows the 2021 EGRA and EGMA G2 and G3 results with the usage of "Darsak" platform considered. We notice that the average performance in ORF for G2 and G3 students who did not utilize the platform during distance learning was low and with statistical significance. We also notice that the mathematics average performance of G2 students who utilized the platform was high and with statistical significance.

Table 52. The 2021 G2 & G3 fluency & accuracy results with utilization of "Darsak" platform

Have you utilized Darsak platform or the educational TV channels?	Total students		ORF		Reading comprehension Yes RC>=80%: Row%		Doing mathematics with understanding Add+Sub Level2≥80% & Missnum≥70%: Row%	
	G2	G3	G2	G3	G2	G3	G2	G3
Yes	833	887	17.0	33.0	11.4%	40.4%	6.61%	19.1%
No	107	71	10.7	19.8	2.8%	21.4%	0.9%	6.2%
Total	939	958	16.5	32.3	10.7%	39.4%	6.1%	18.4%

3.4.5 The correlation between reading homework sent by teachers and the average performance in reading and mathematics

Table 53 below shows G2 and G3 results with reading homework considered. We notice that the average performance in ORF for G2 students who, during distance learning, did not receive Arabic language homework from their teachers was low and with statistical significance.

Table 53. The 2021 EGRA and EGMA G2 and G3 results with Arabic language homework

Has the Arabic language teachers sent you homework?	Total students		ORF		Reading comprehension Yes RC>=80%: Row%		Doing mathematics with understanding Add+Sub Level2≥80% & Missnum≥70%: Row%	
	G2	G3	G2	G3	G2	G3	G2	G3
Yes	797	858	17.3	32.7	11.4%	39.5%	6.5%	18.6%
No	142	99	12.0	27.8	6.9%	38.6%	4.2%	16.9%
Total	939	958	16.5	32.3	10.7%	39.4%	6.1%	18.4%

3.4.6 The correlation between mathematics homework sent by teachers and the average performance in reading and mathematics

Table 54 below shows the 2021 EGRA and EGMA G2 and G3 results with mathematics homework considered. We notice that the average performance in ORF for G2 students who, during distance learning, did not receive mathematics homework from their teachers was low and with statistical significance. We also notice that the average performance in doing mathematics

with understanding for G2 students who, during distance learning, received mathematics homework from their teachers was high and with statistical significance.

Table 54. The 2021 EGRA and EGMA G2 and G3 results with mathematics homework

Has the mathematics teachers sent you homework?	Total students		ORF		Reading comprehension Yes RC>=80%: Row%		Doing mathematics with understanding Add+Sub Level2≥80% & Missnum≥70%: Row%	
	G2	G3	G2	G3	G2	G3	G2	G3
Yes	811	866	17.5	32.7	11.8%	39.5%	7.08%	19.0%
No	127	91	9.7	28.6	4.2%	38.6%	0.2%	13.1%
Total	939	958	16.5	32.3	10.7%	39.4%	6.1%	18.4%

3.4.7 The correlation between the availability of reading learning materials at home and the average performance in reading and mathematics

Table 55 below shows the 2021 EGRA and EGMA G2 and G3 results with the availability of reading learning materials at home considered. We notice that the average performance in ORF for G2 students who did not have reading learning materials at home during distance learning was low and with statistical significance.

Table 55. The 2021 EGRA and EGMA G2 and G3 results with the availability of reading learning materials at home considered

Do you have reading learning materials at home	Total students		ORF		Reading comprehension Yes RC>=80%: Row%		Doing mathematics with understanding Add+Sub Level2≥80% & Missnum≥70%: Row%	
	G2	G3	G2	G3	G2	G3	G2	G3
Yes	714	821	17.8	33.2	12.0%	40.2%	6.5%	18.9%
No	224	136	12.2	26.7	6.5%	34.3%	5.1%	15.5%
Total	939	958	16.5	32.3	10.7%	39.4%	6.1%	18.4%

3.4.8 The correlation between the frequency of the weekly studying and learning sessions and the average performance in reading and mathematics

Table 56 below shows the 2021 EGRA and EGMA G2 and G3 results with the frequency of the weekly studying and learning sessions considered. We notice that the average performance in ORF for G2 and G3 students who did not study at all during distance learning was low and with statistical significance.

Table 56. The 2021 EGRA and EGMA G2 and G3 results with the weekly studying and learning sessions considered

How often do you study per week?	Total students		ORF		Reading comprehension Yes RC>=80%: Row%		Doing mathematics with understanding Add+Sub Level2≥80% & Missnum≥70%: Row%	
	G2	G3	G2	G3	G2	G3	G2	G3
I do not study at all.	94	53	11.0	22.2	5.1%	45.1%	1.7%	22.5%
Everyday	52	52	16.2	32.5	9.1%	33.7%	9.9%	21.1%
2-3 times a week	576	652	17.6	33.1	13.1%	41.9%	6.7%	18.2%
Once a week	190	175	15.4	31.6	5.9%	31.7%	5.2%	15.4%
I do not remember	27	26	14.1	29.5	10.2%	33.8%	0.0%	32.2%
Total	939	958	16.5	32.3	10.7%	39.4%	6.1%	18.4%

Overall, the findings of the questionnaires, which reflect the students' backgrounds, indicate the following:

- Students who attended the "Darsak" distance learning platform daily showed better results than those who did not access the platform: +6 correct words per minute (cwpm) for G2 and +11.6 cwpm for G3, on average.
- Students who were given regular exercises/tasks by teachers also show better results than students who did not regularly receive exercises: +6.7 cwpm for G2 and +8 correct cwpm for G3 on average.
- G2 students whose parents read to them regularly showed better results in reading than those who were not regularly read to by their parents: +4.2 cwpm.
- These results point to promising evidence of the positive impact of these activities, but it must also be noted that 11% of grade 2 students reported that they did not access any distance education platforms (7% for grade 3).

4. Conclusions and Recommendations

The conclusions and recommendations mentioned in this report were developed collaboratively by the RAMP team and the MOE during an analysis and review workshop held in April 2021. The workshop was attended by 18 participants and focused on reviewing the survey results, identifying key gains and achievements, discussing challenges and proposed solutions, and specifying the next steps for research and implementation.

4.1 Conclusions

Overall, the results of this survey tend to show a similar performance level in reading skills when we compare between 2019 and 2021. The survey, however, shows bigger concerns about a decline in mathematics skills. The decline among G2 students was greater than that of G3 students. The results also indicated that there was either consistency or improvement in the percentages of the students who achieved zero scores whether in reading or mathematics skills in both grades.

First—EGRA results:

- In all skills, when we compared between 2019 and 2021 surveys, accuracy levels tended to be consistent while fluency levels tended to decline.
- There was a significant drop in zero scores of the foundational skills such as letter sounds and syllable sounds. This is a positive sign; it proves that students possess the minimal foundational skills.
- The biggest decline was in G2, particularly in the reading comprehension task. Comprehension rates decreased quite significantly, as the percentage of G2 students who read fluently and comprehensively decreased from 14.4% in 2019 to 10.7% in 2021. As for G3 performance, there was no decline; this was probably attributed to the efforts the MOE had put into enhancing teaching methods in the last two years.
- The percentage of students who can read at least 46 correct words per minute has decreased in both grades.

Second—EGMA results:

- As in reading, fluency in mathematics has been affected by school closures. There is a decrease in all subtasks in both grades, but it was bigger in mathematics than in reading.
- Overall, the biggest decline was in higher-order skills such as level-2 addition and subtraction and missing number items.
- There was also a significant decline in the percentage of G2 and G3 students who meet the benchmark of doing mathematics with understanding—the percentage of G2 students decreased from 19.3% in 2019 to only 6.1% in 2021, while the percentage of G3 students decreased from 30.7% in 2019 to 18.4% in 2021.

In general, the decline in the results of most skills among most G2 and G3 students in 2021–compared to 2019–is attributed to the cessation of face-to-face learning at schools and the transition to distance learning due to Covid-19 since mid-March of the second semester of the 2019-2020 academic year and most of the 2020-2021 academic year. Additionally, there was the teachers' strike, which lasted a whole month during the first semester of 2020-2021 academic year.

Moreover, the 2021 survey was administered at the end of February while the 2019 one was administered at the end of April 2019—i.e., there was a two-month difference in favor of the 2019 survey. It was also noted that the decline of G2 students' skills was significantly bigger compared to G3, which was mainly attributed to the fact that G3 students had had a longer period of face-to-face learning during the last three years: approximately 14 months—i.e., more than two times longer than G2 students who only had 6 months of face-to-face instruction.

On the other hand, there was an improvement in G3 aloud-reading comprehension—the percentage increased from 34.1% to 39.4%. This could be attributed to the maturity and sustainability of the skills acquired by G3 students since they had a longer period of face-to-face learning. It was also easier for their parents and teachers to monitor them during the virtual learning period because they had acquired a big part of the foundational reading skills during the face-to-face learning period before transitioning to remote learning.

There was a noticeable decline the results of mathematics skills in both grades, but it was greater among G2 students. The rationale behind this decline is a set of factors. First, the uniqueness of mathematics, which necessitates a specialized teacher and face-to-face instruction for the concrete, semi-concrete, and abstract sequencing—which is difficult to achieve in distance learning. Second, the students' need for materials and tools to help them learn mathematics. Third, due to the need for constant practice that cannot be achieved in distance learning, mathematical skills are quite forgettable. Finally, and the limited mathematics skills of parents prevent them from following up with their children at home.

Moreover, there was noticeable improvement in zero scores, in both mathematics and reading skills, attributed to the fact that distance learning contributes to achieving the minimal level of learning. However, it is difficult for students to reach higher performance levels via remote learning due to lack of interaction and individual differences considerations, in addition to the low capacities of many parents and their lack of skills and experiences possessed by classroom teachers.

Among the downsides of distance learning that contributed to the decline of students' skills are the following:

- The inconsistency of equal learning due to the lack of needed devices among many learners.
- The inability of teachers to teach advanced curricula via online platforms.
- The lack of monitoring and support by supervisors.
- The inability of teachers to consider individual differences or apply differentiated instruction
- The inability of teachers to utilize and follow up on workbooks; and
- The overlapping of programs applied to G2 and G3 students (recovery program, critical outcomes program…etc.)

A dramatic decline was also noticed in all skills of refugee camp students. This can be attributed to the discrepancies among camp teachers in terms of experience in RAMP since all of them are

substitute teachers most of whom have not been trained on the RAMP methodologies. Another rationale is the economic and psychosocial issues from which camp residents, particularly students, suffer.

Although there were concerns that lower-performing students may suffer the greatest losses during school closures—which has been hypothesized globally—the results from this study showed no increases in the proportions of grade 2 and grade 3 learners who were unable to correctly identify a single item across subtasks (i.e. 'zero scores'). Conversely, ***results showed significant reductions in zero scores for grade 3 students in basic skills (letter and syllable sounds), and for grade 2 students in higher order reading skills (silent reading comprehension)***. These reductions in 'zero scores' from 2019 to 2021 are arguably the result of RAMP and MOE focus on low-performing children and differentiated instruction over the past two years.

It is worth mentioning that there is promising evidence of the positive impact of a set of activities implemented during distance learning. The students who followed the distance-learning program daily through the "Darsak" platform achieved better results compared to the students who did not utilize the platform. Additionally, the students who were given regular exercises/tasks by their teachers also had better results than the students who did not receive exercises regularly. Furthermore, G2 students whose parents read to them regularly had better results in reading than those whose parents did not read to them regularly.

Overall, the similarity of scores in reading is positive but should not be seen as confirmation that no learning loss occurred. First, it is important to remember that the 2021 assessment was conducted 2 months earlier than 2019 EGRA. Additionally, the MOE (with RAMP support), had made a substantial effort to improve early grades reading and mathematics performance in the last two years, and without the school interruption, we could have seen substantial gains in performance. Instead, we observe that the MOE, through its different interventions during school closure, has managed to mitigate the impact on reading skills.

Additionally, children with limited access to distance education programs show much lower results than their peers who attended it regularly. The implication is that remediation and recovery efforts must be focused heavily on students at the start of school. One needs to teach these children "at the right level" and start from where they are, not where they should be per the curriculum.

While average learning losses were not nearly as large as some have feared, there was still evidence of reduced performance in nearly all mathematics skill, as well as several reading skills. This is particularly troubling for the most vulnerable children, who are least likely to have had access to distance learning opportunities or support for learning at home. As a result, it will be more important than ever to redouble RAMP and MOE efforts on remedial work to ensure that all students are on track and that those who may have fallen behind have sufficient opportunities to build their foundational skills and catch up with their higher-performing peers.

This all points to evidence that MOE's focus on foundation skills, differentiated instruction, and new remediation approaches is important for limiting learning losses (particularly in reading for vulnerable and low-performing children) and will be essential for recovering any lost learning that occurred due to school closures.

4.2 Recommendations

- It is imperative that early grade students return to face-to-face learning with their teachers at schools as soon as possible. It is also necessary to develop the perquisite plans to provide all students with catch-up programs.
- The e-learning platform must be assessed in terms of efficiency and effectiveness to be enhanced so it would consider student interaction, individual differences, and differentiated instruction.
- Parents need to be provided with demonstrative tools and guiding videos about the importance of the platform and how to interact with it.
- Students need to be provided with reading and mathematics workbooks and encouraged to utilize them.
- Students who do not have the needed devices for online learning should have access to computer labs at schools.
- It is necessary that educational supervisors monitor and provide teachers with effective technical support.
- Summer break and the new academic year must be invested in by creating remedial plans and equipping teachers with various assessment strategies and tools.
- Increasing the time allocated for reading lessons should be considered. Additionally, students must have a wide range of texts and be urged to participate in more interactive reading activities.
- A “time on task” research study needs to be conducted to measure the time students spend on active learning during a typical school day. This should include the extent to which students interact with other printed materials.

Annexes

Annex 1: EGRA basic sample results disaggregated by governorates

The figures below display the 2021 G2 and G3 EGRA results disaggregated by governorates:

Figure 3. The 2021 G2 rate of reading letter sounds

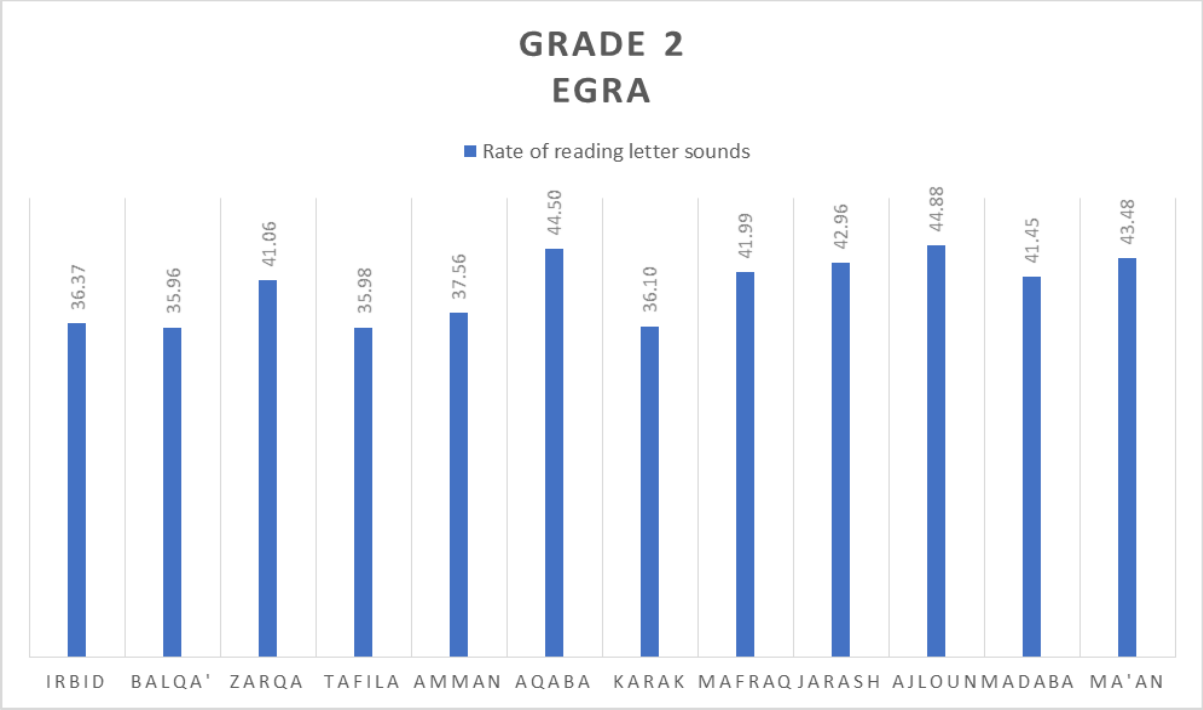


Figure 4. The 2021 G2 rate of reading syllables

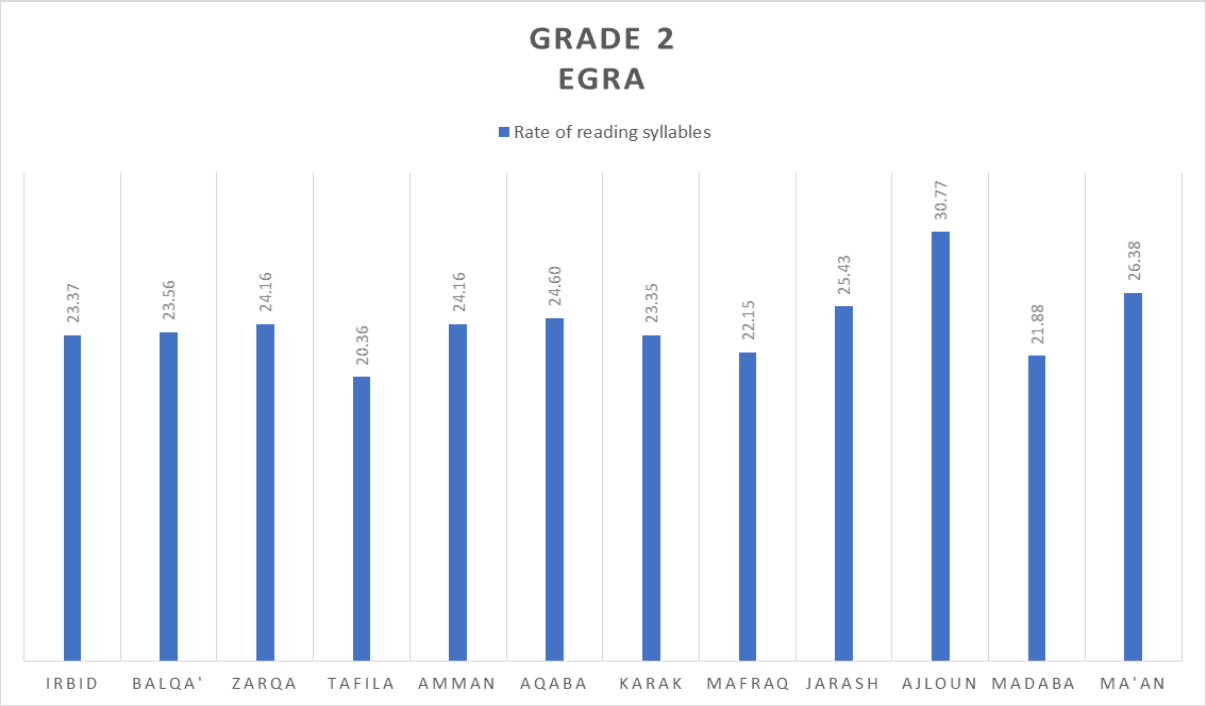


Figure 5. The 2021 G2 rate of reading invented words

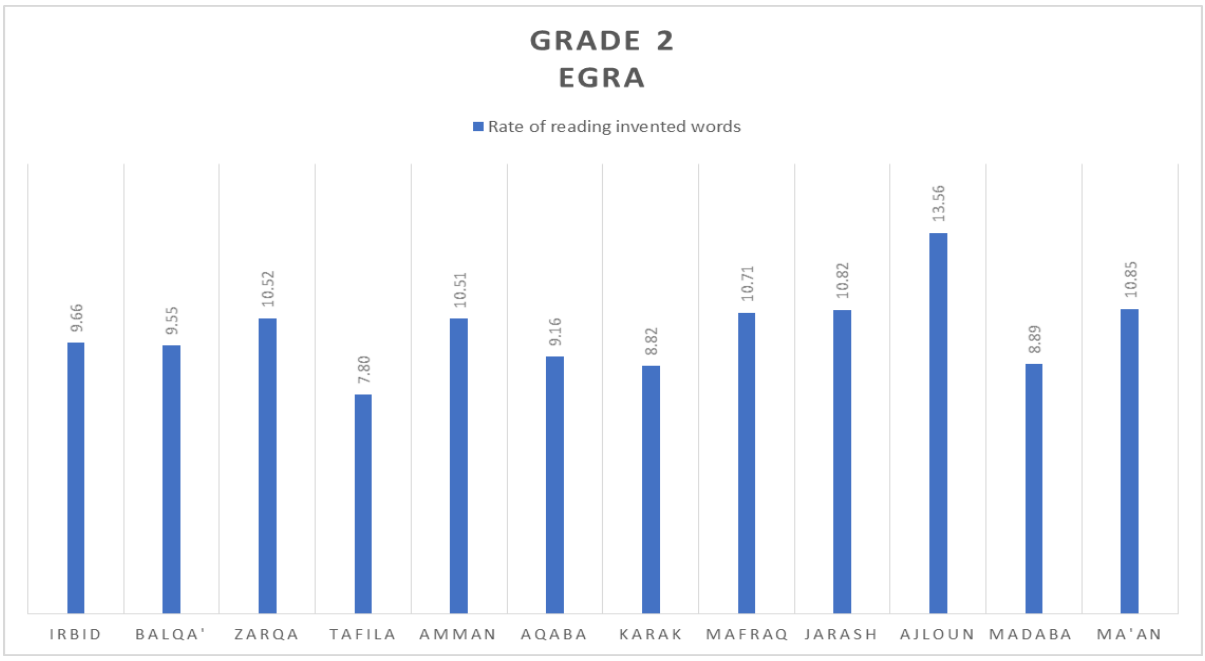


Figure 6. The 2021 G2 zero scores of reading with diacritics

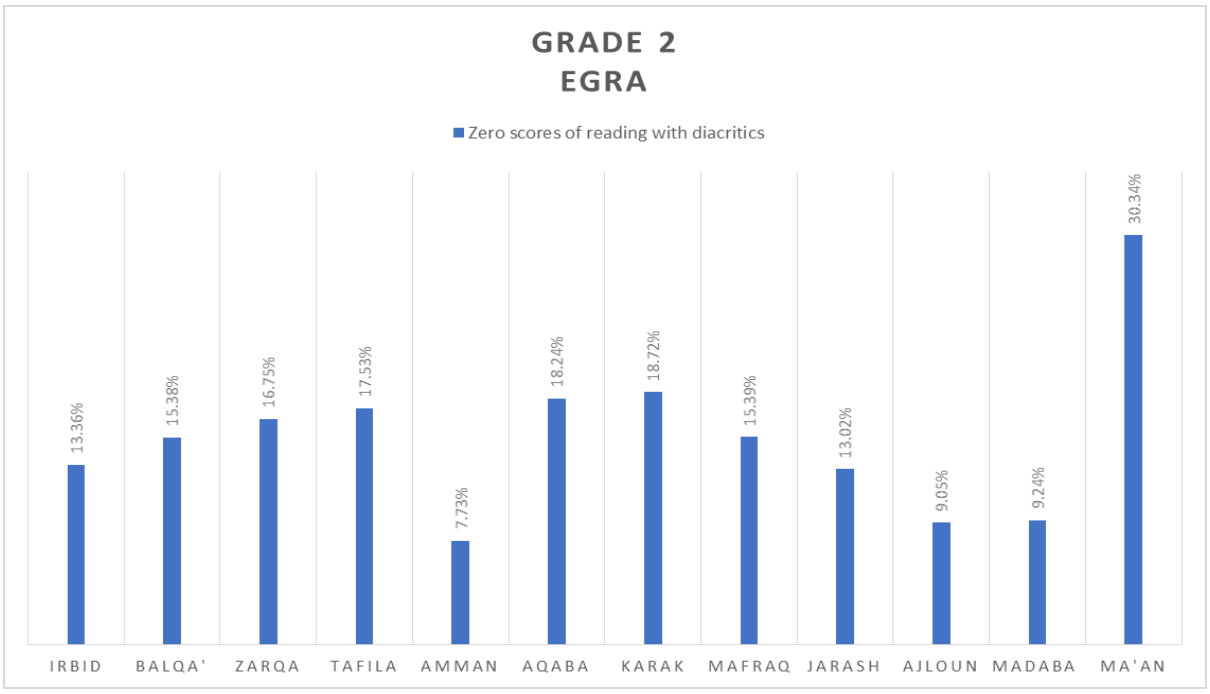


Figure 7. The 2021 percentage of G2 students who read comprehensively and answered 4 out of 5 the comprehension questions

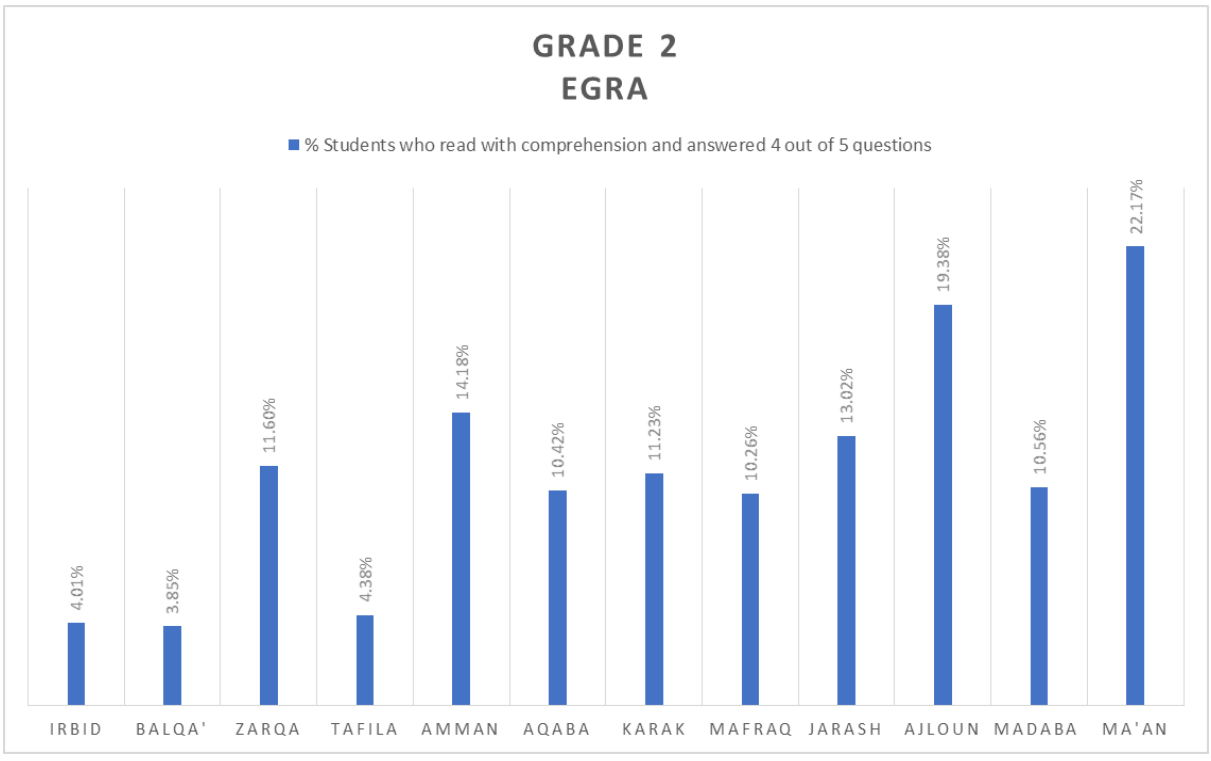


Figure 8. The 2021 percentage of G2 students who read silently and answered 4 out of 5 the comprehension questions

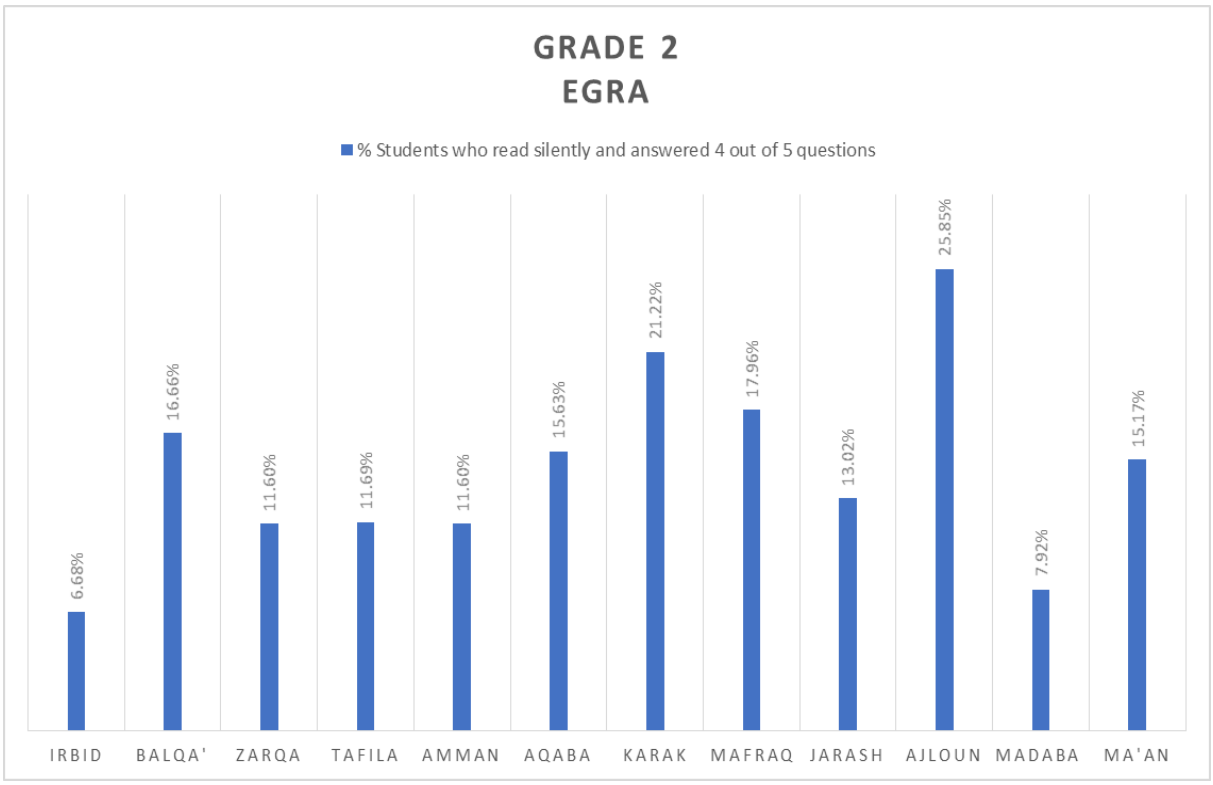


Figure 9. The 2021 percentage of G2 students who answered at least 4 out of 5 the comprehension questions on the listening text

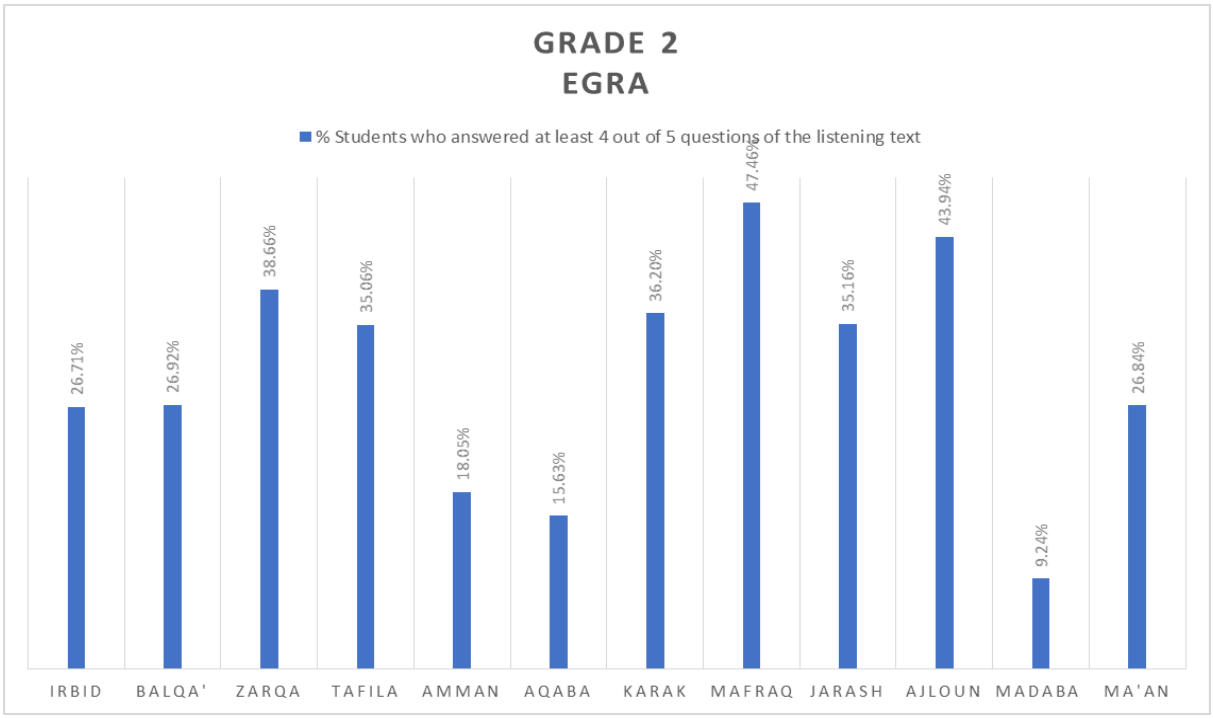


Figure 10. The 2021 percentage of G2 students who achieved the benchmark—reading at least 46 words per minute

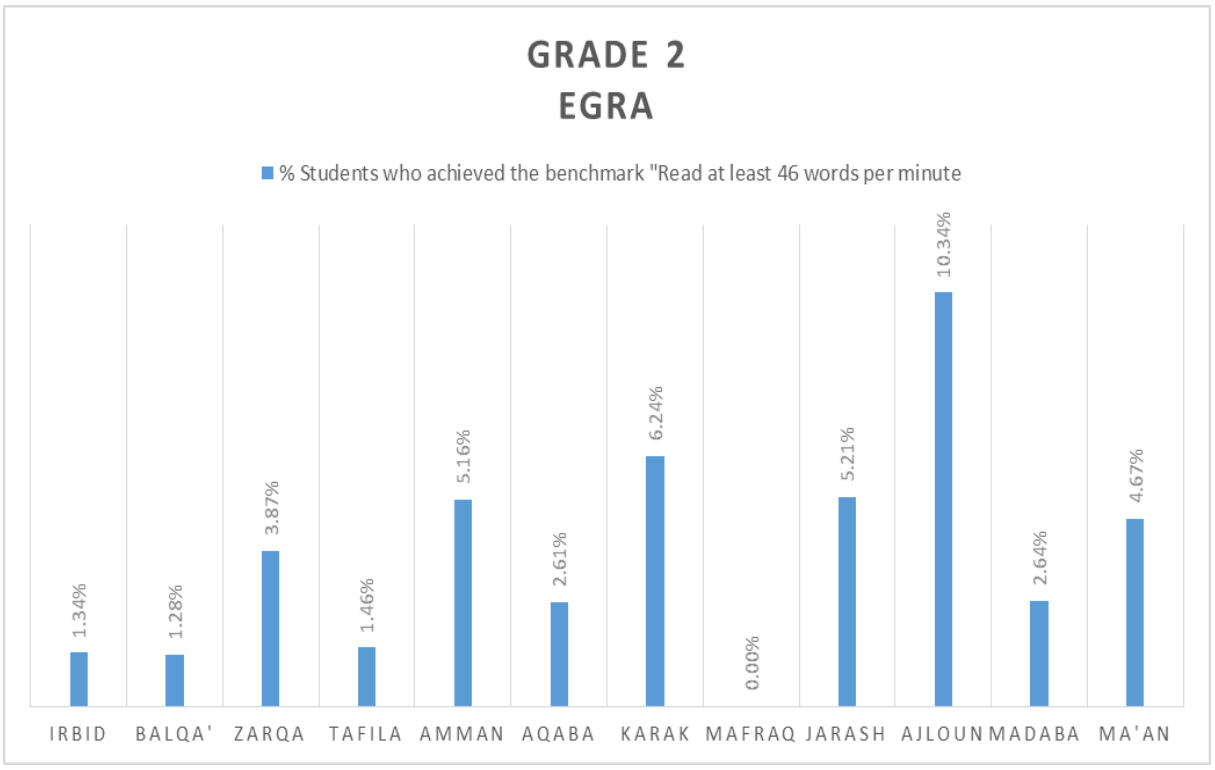


Figure 11. The 2021 G2 rate of reading words

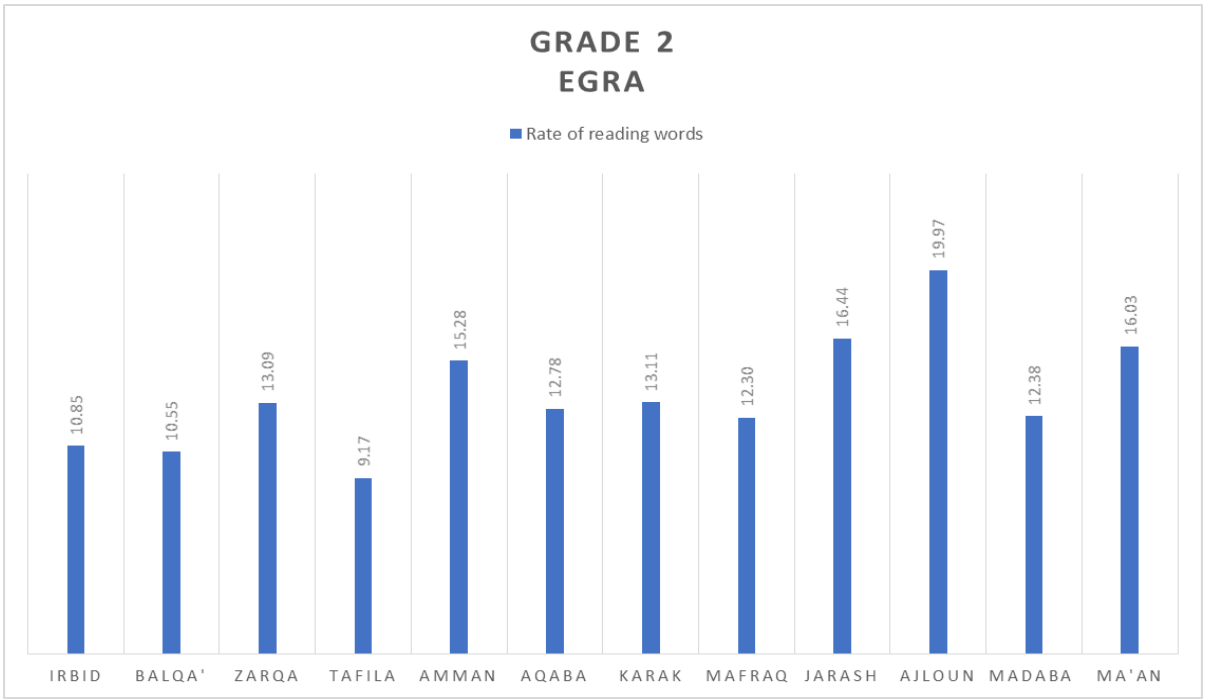


Figure 12. The 2021 G3 rate of reading letter sounds

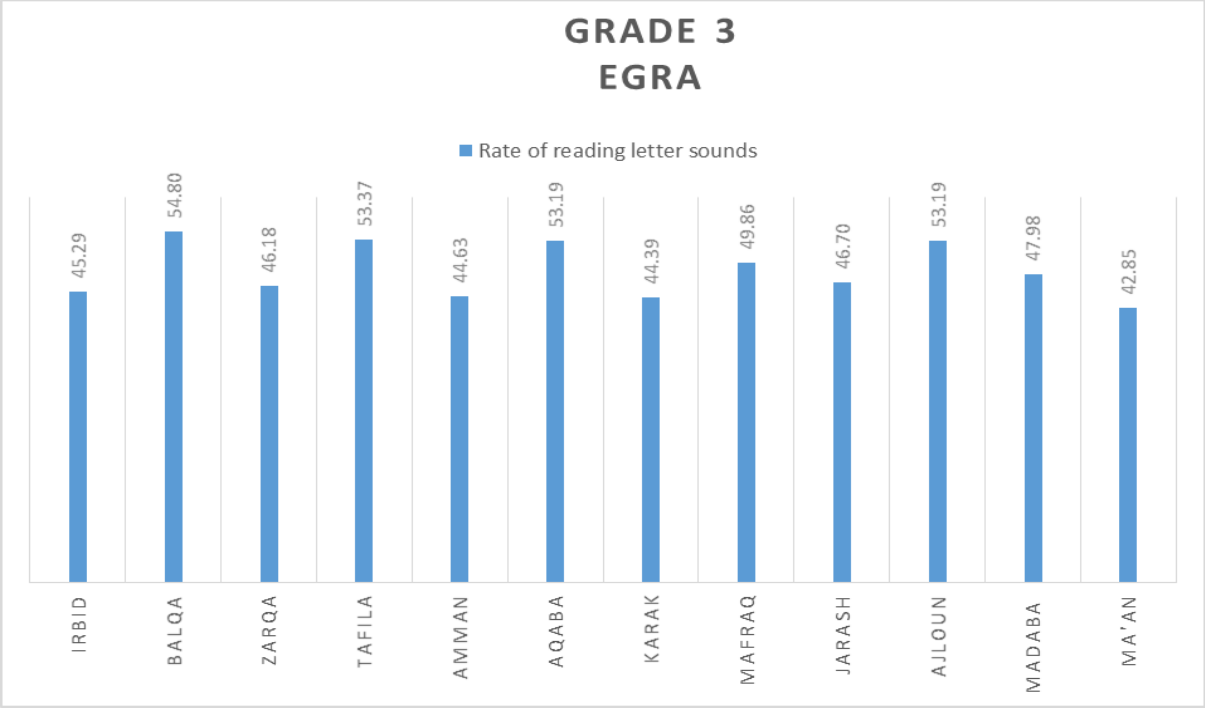


Figure 13. The 2021 G3 rate of reading syllables

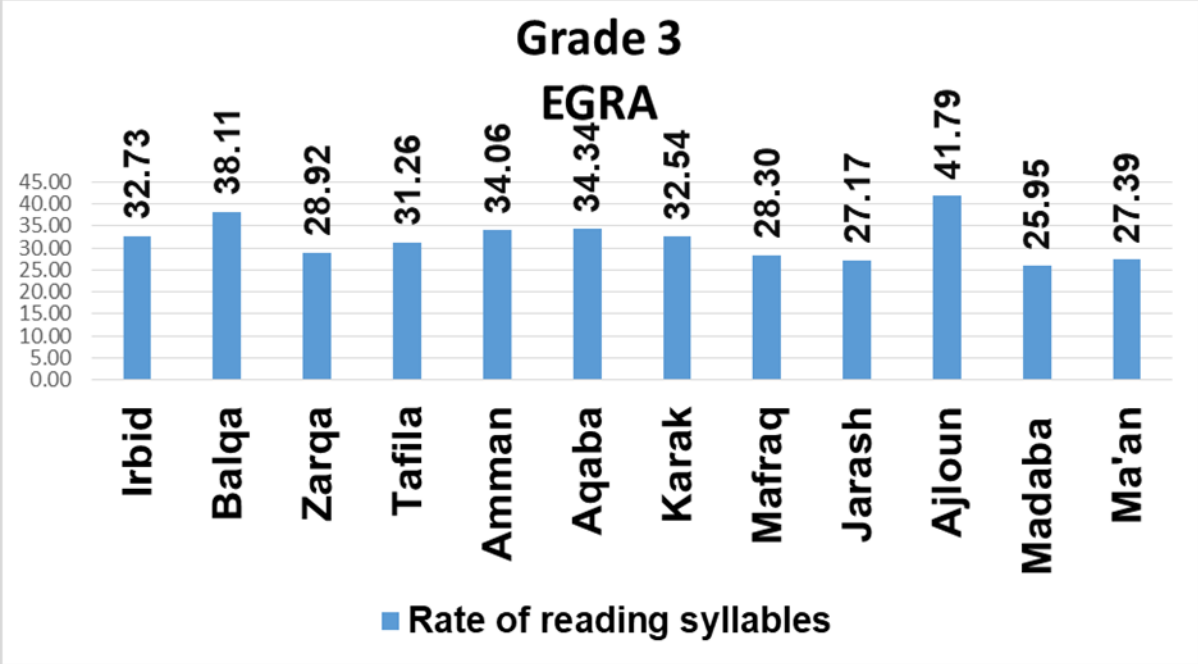


Figure 14. The 2021 G3 rate of reading invented words

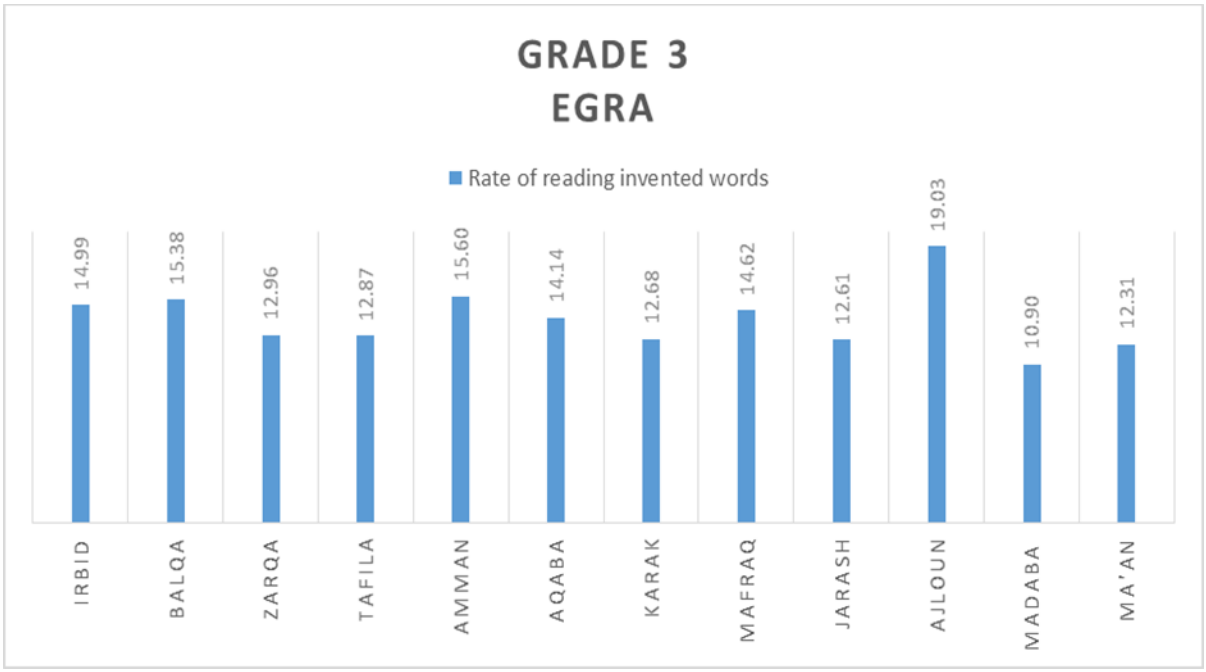


Figure 15. The 2021 G3 zero scores of reading with diacritics

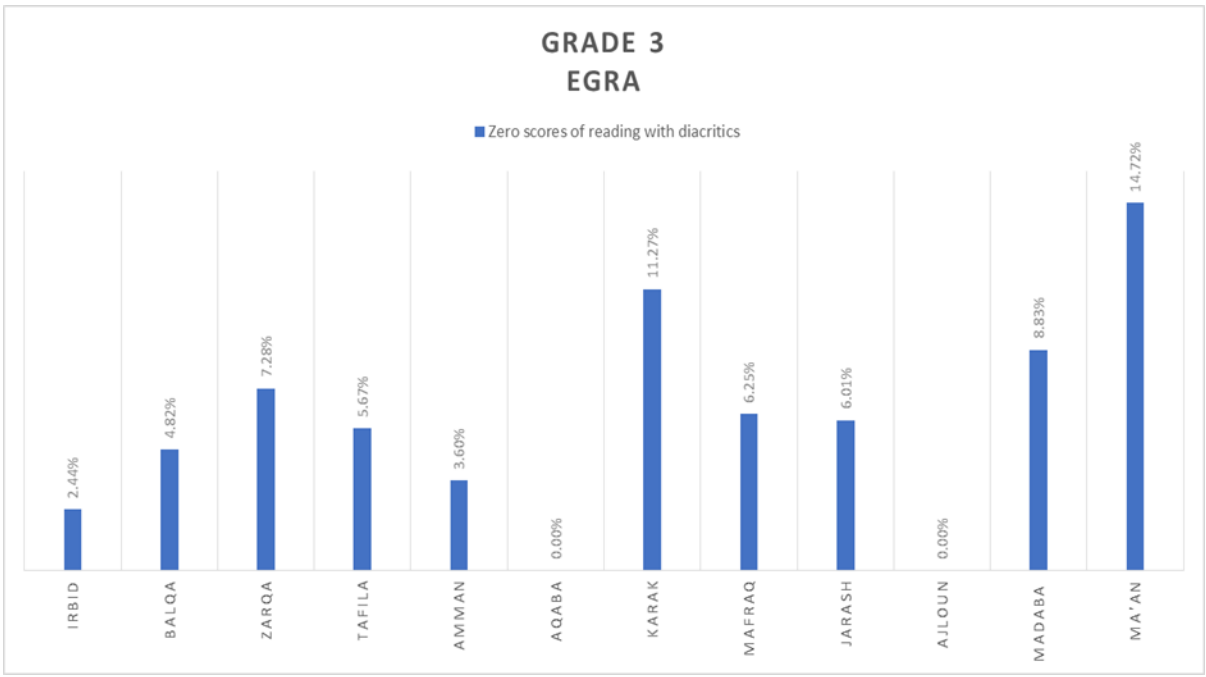


Figure 16. The 2021 percentage of G3 students who read comprehensively and answered 4 out of the 5 comprehension questions

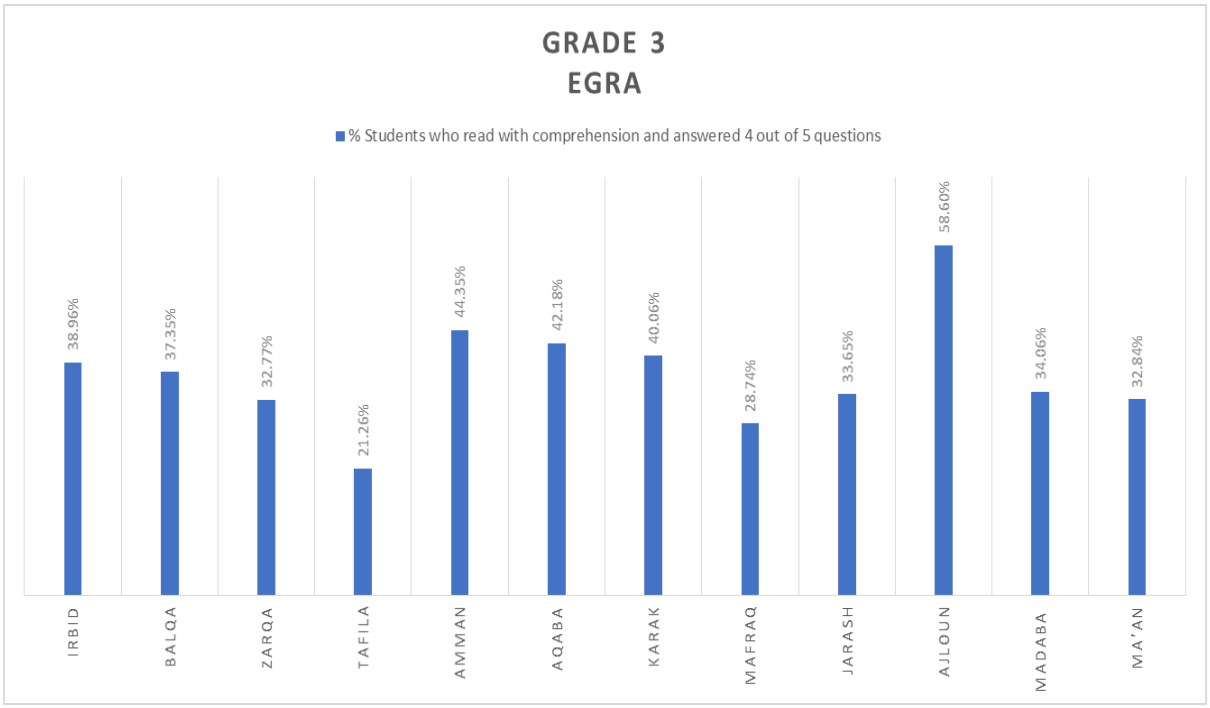


Figure 17. The 2021 percentage of G3 students who read silently and answered 4 out of the 5 comprehension questions

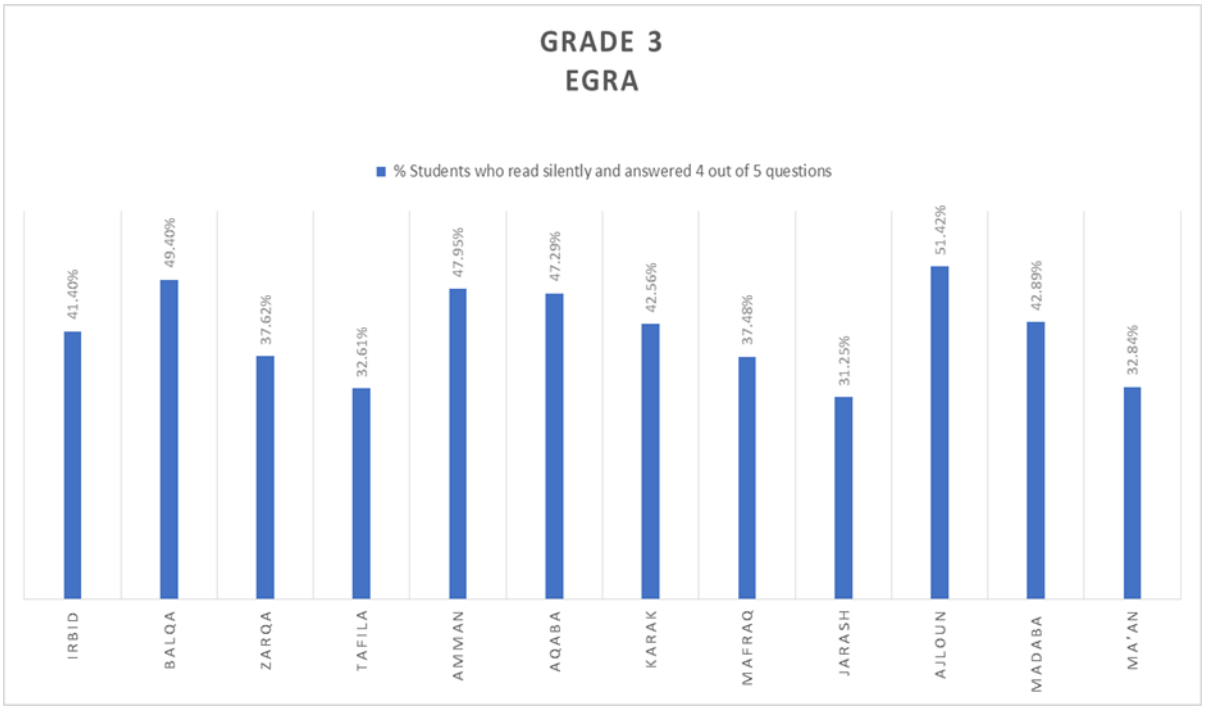


Figure 18. The 2021 percentage of G3 students who answered 4 out of the 5 comprehension questions on a listening text

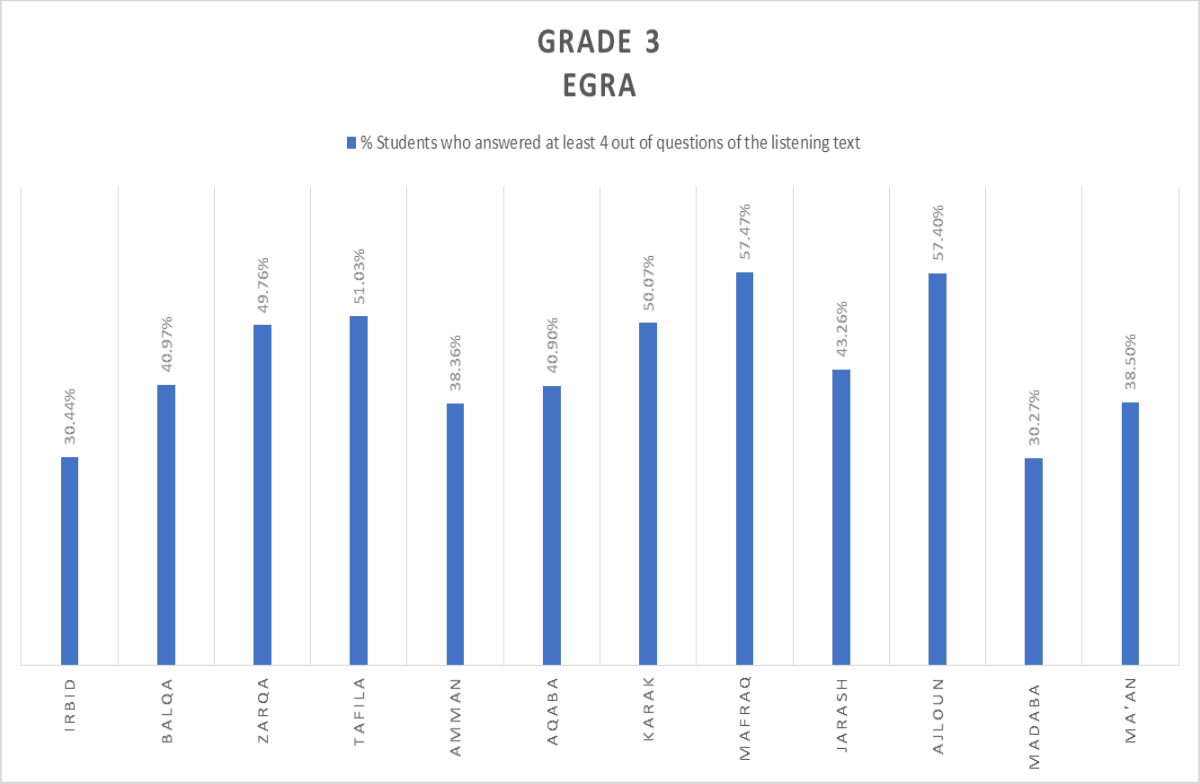


Figure 19. The 2021 percentage of G3 students who achieved the benchmark—reading at least 46 words per minute

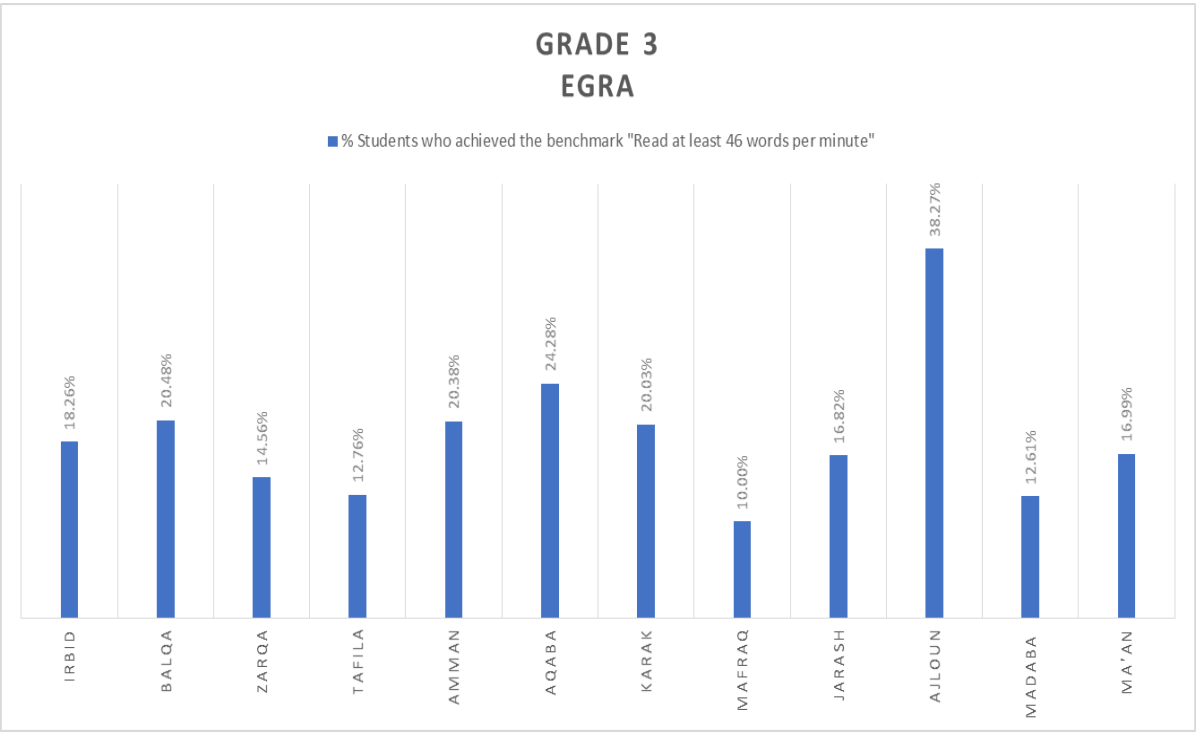
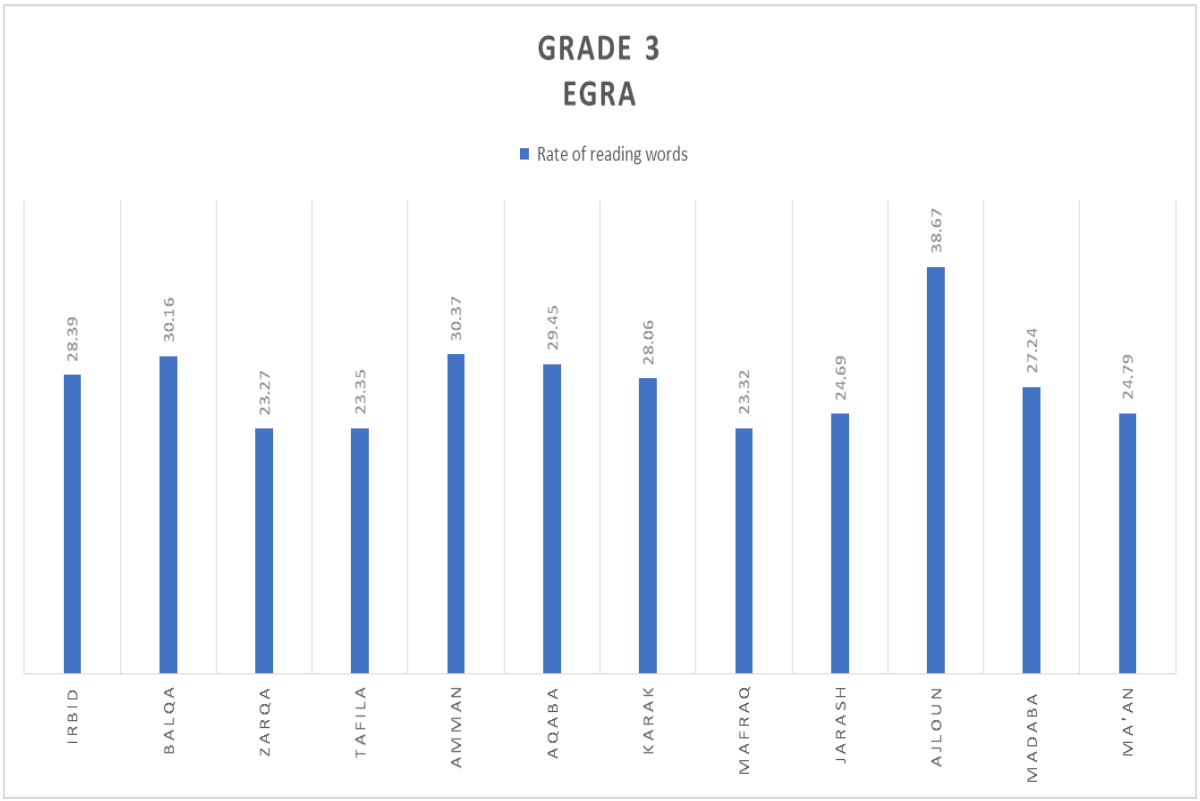


Figure 20. The 2021 G3 rate of reading words



Annex 2: EGMA basic sample results disaggregated by governorates

The figures below display the 2021 G2 and G3 EGMA results disaggregated by governorates:

Figure 21. The 2021 G2 number reading fluency results

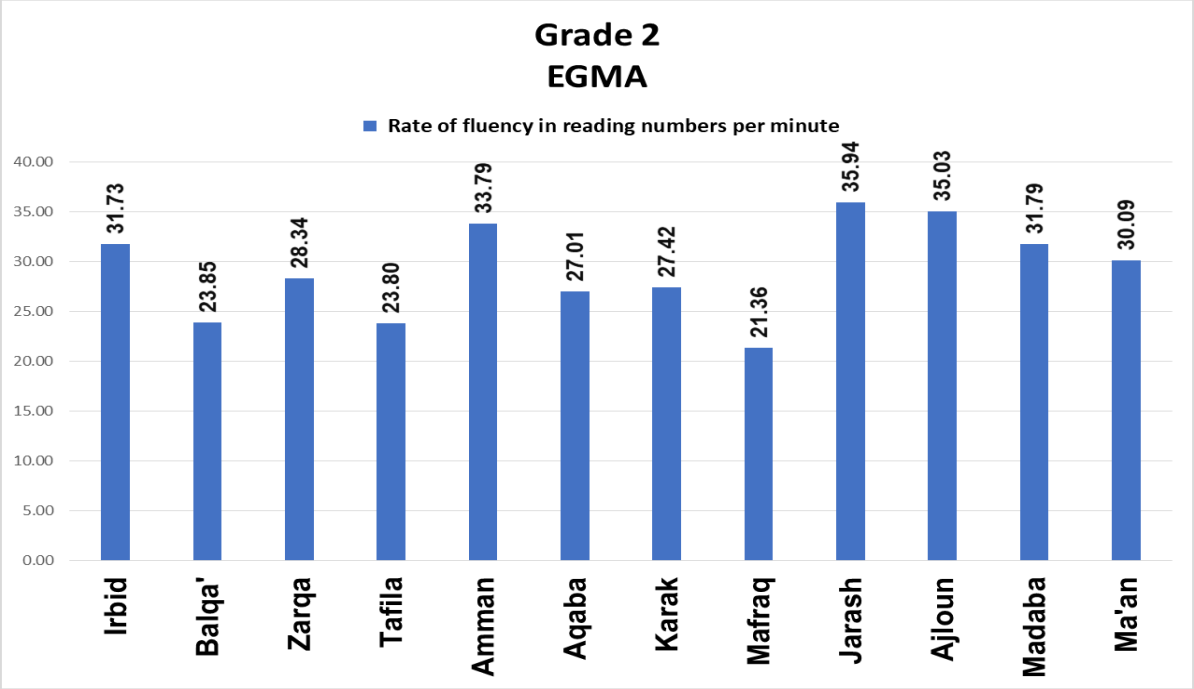


Figure 22. The 2021 G2 level-1 addition fluency results

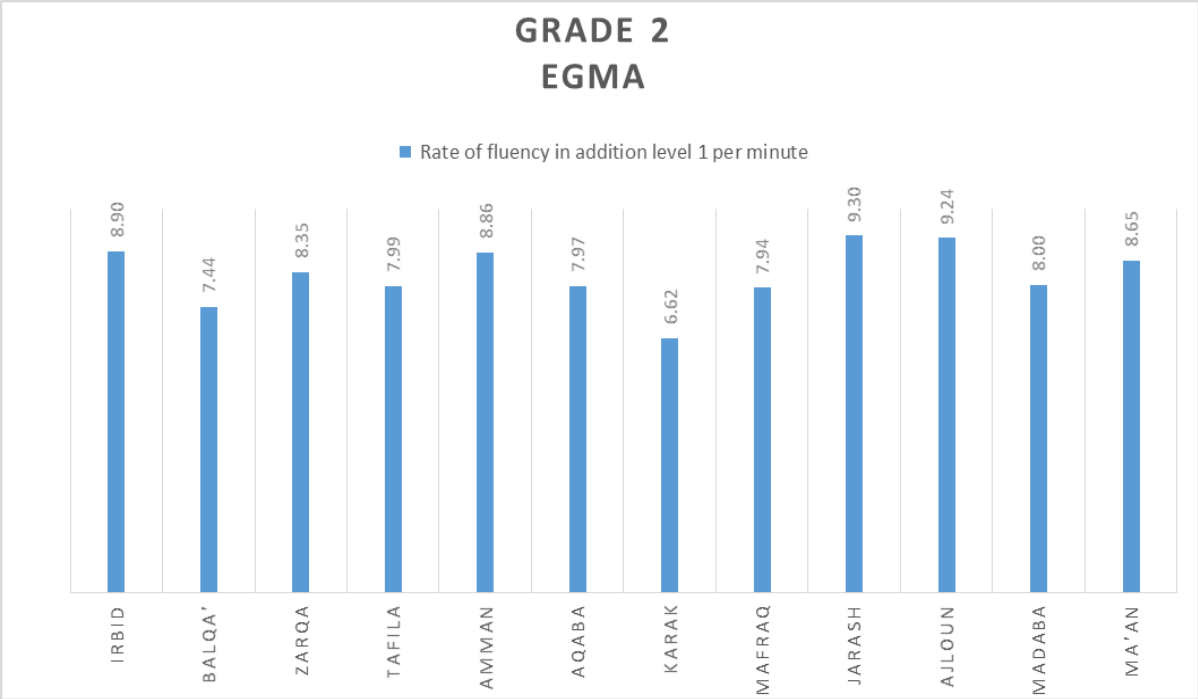


Figure 23. The 2021 G2 missing number fluency results

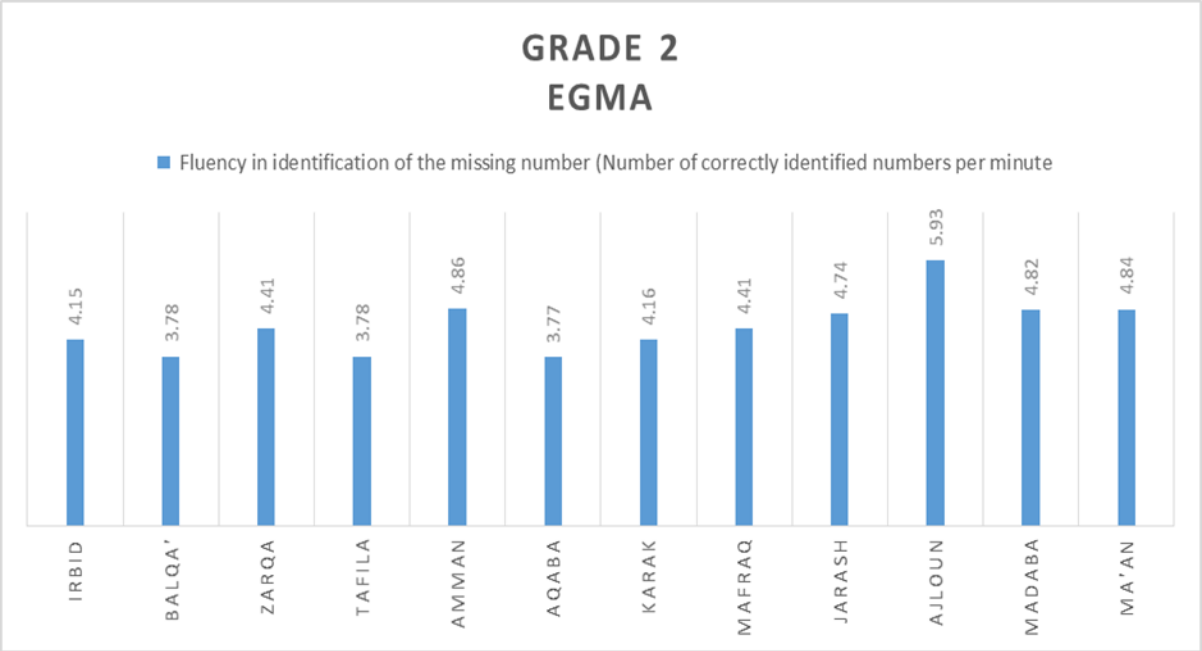


Figure 24. The 2021 G2 level-1 subtraction fluency results

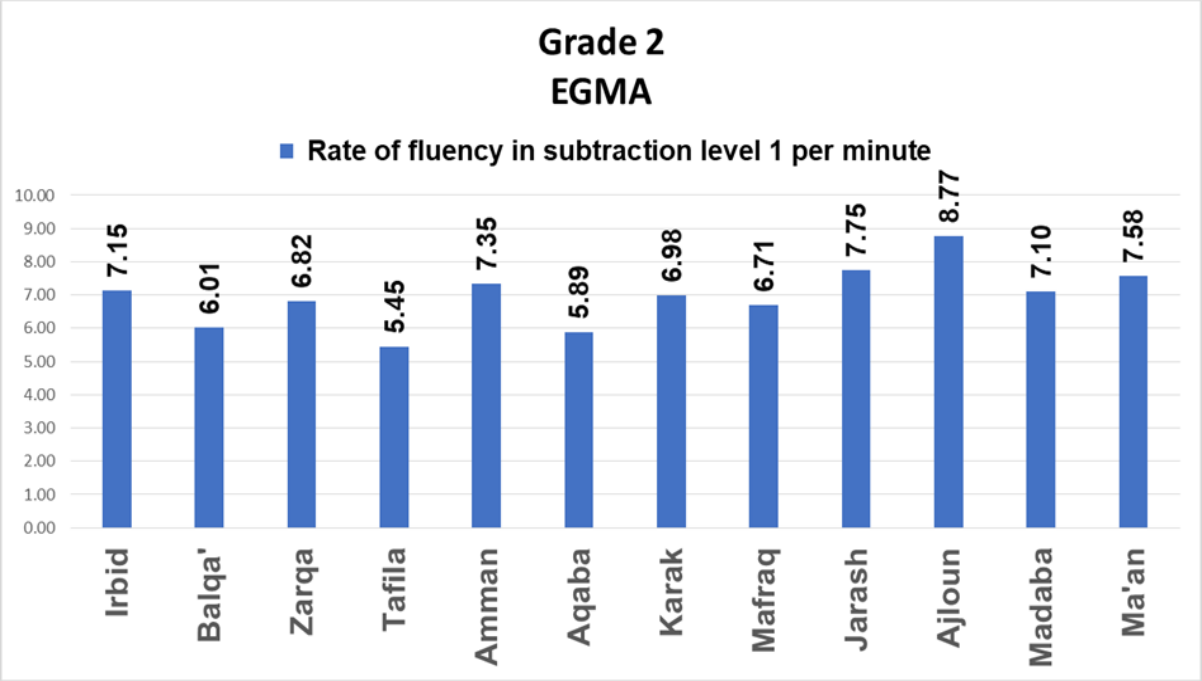


Figure 25. The 2021 percentage of G2 students who correctly answered 70% of the missing number items and 80% of the level-2 addition and subtraction items

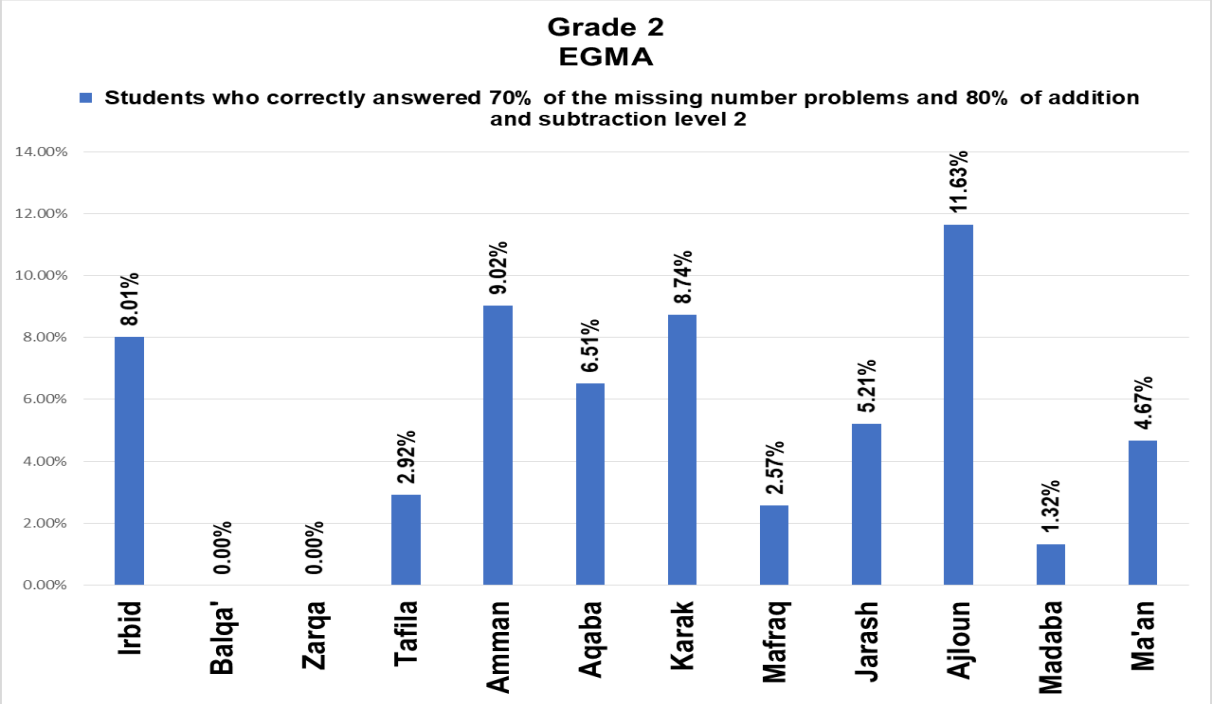


Figure 26. The 2021 G3 number reading fluency results

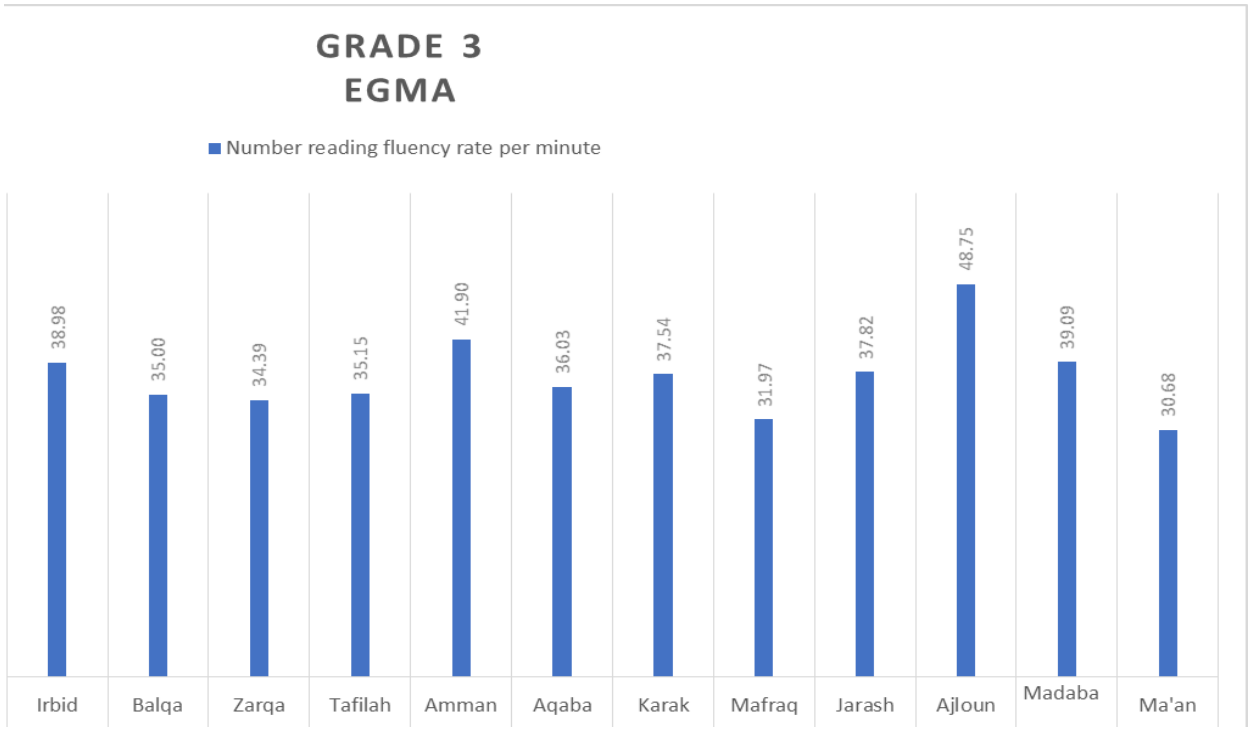


Figure 27. The 2021 G3 level-1 addition fluency results

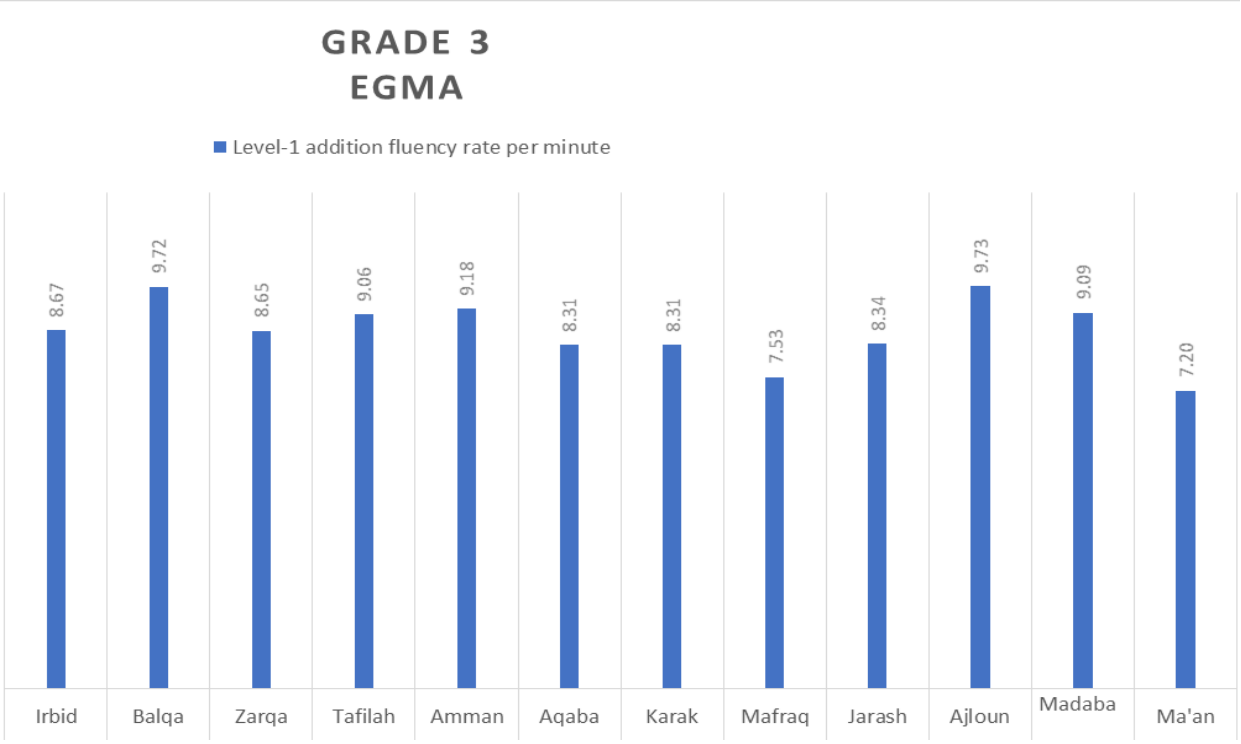


Figure 28. The 2021 G3 missing number fluency rate

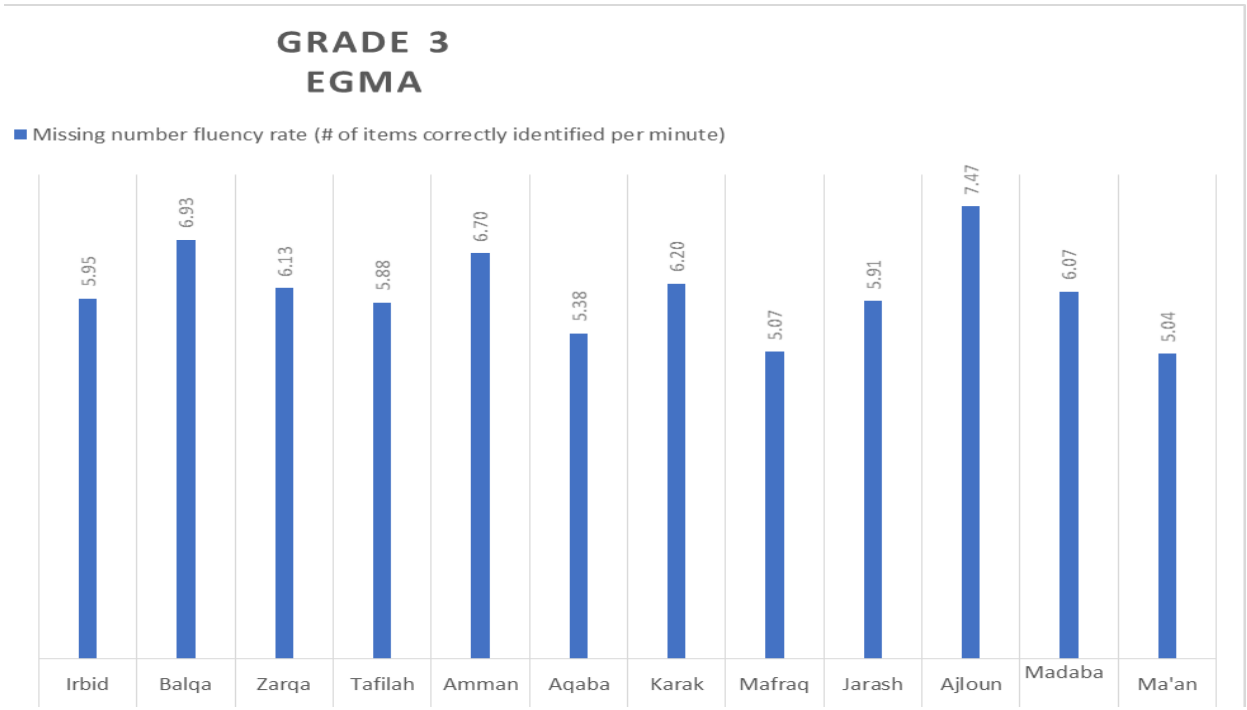


Figure 29. The 2021 G3 level-1 subtraction fluency rate

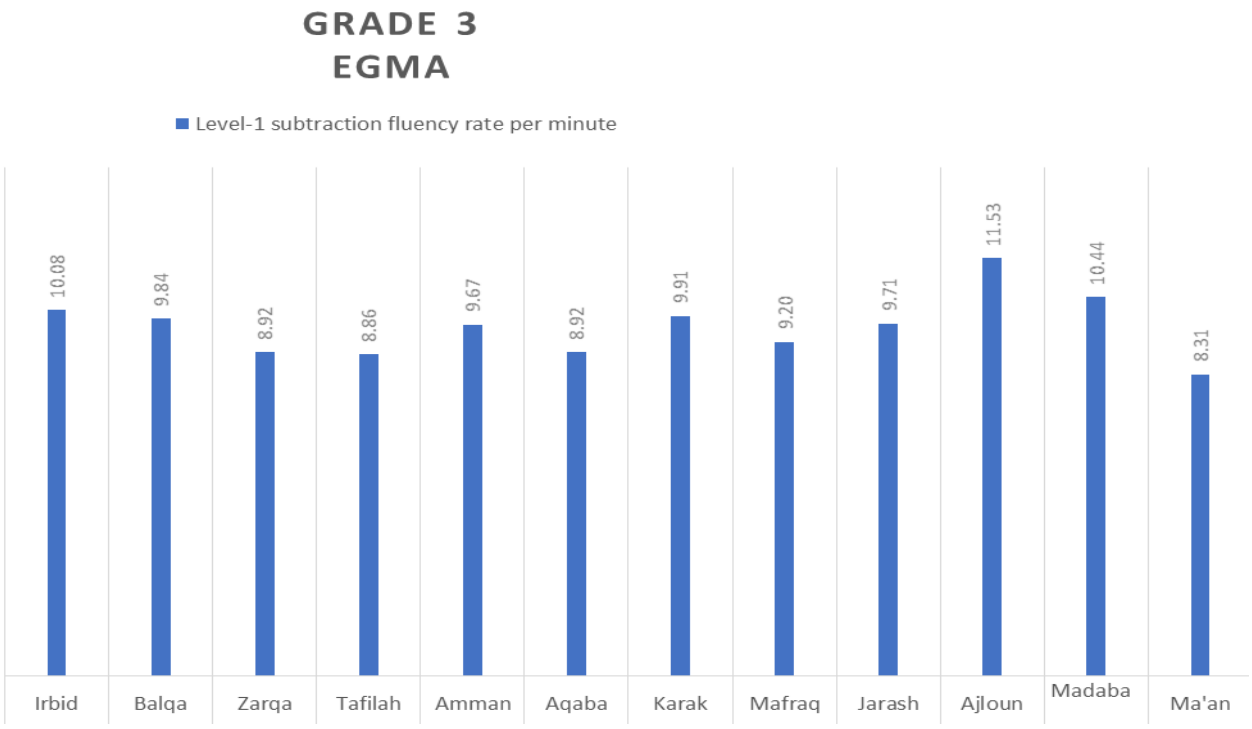


Figure 30. The 2021 percentage of G3 students who correctly answered 70% of the missing number items and 80% of the level-2 addition and subtraction items