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Education Data for Decision Making (EdData II): National Early Grade Literacy and Numeracy Survey–Jordan

Remedial Pilot Research Activity Report

First draft report

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EdData II
Task Order No. 16
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Prepared for
USAID/Jordan
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Table of Contents

Page

List of Figures

List of Tables

Abbreviations

AVSI	The Association of Volunteers in International Service
C	Control group
CADER	ChangeAgent for Arab Development and Education Reform
COR	Contracting Officer's Representative
cwpm	correct words per minute
DID	Difference-in-differences
Diff	Difference
EdData	Education Data for Decision Making
EGMA	Early Grades Mathematics Assessment
EGRA	Early Grades Reading Assessment
EMIS	Education Management Information System
ETC	Education Training Center
KG	kindergarten
K-S	Kolmogorov-Smirnov test
L1	Level 1
L2	Level 2
MoE	Ministry of Education
MSA	Modern Standard Arabic
NC	North Carolina
NGO	nongovernmental organization
NI	Number identification
NRC	Norwegian Refugee Council
ORF	Oral reading fluency
QRTA	Queen Rania Teacher Academy
RAMP	Early Grade Reading and Mathematics Initiative
RTI	RTI International (a trade name of Research Triangle Institute)
SD	standard deviation
SMS	Short message service
SSME	Snapshot of School Management Effectiveness
T	Treatment group
TE	Treatment effect (or impact)
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development

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Executive Summary

To gain insight into student facility with foundational skills and to better understand characteristics among Jordanian schools that are associated with student performance, the Jordan Ministry of Education (MoE) conducted the Snapshot of School Management Effectiveness (SSME), including the Early Grade Reading Assessment (EGRA) and Early Grade Mathematics Assessment (EGMA), in a sample of primary schools in Jordan at the end of the 2011/2012 school year.

The report on the National Survey of 2012 indicated that although students were quite comfortable with some of the procedural mathematics skills, their conceptual understanding needed to be strengthened. Similarly, although some students were reading with a high level of fluency and understanding and achieving 80% or more on their comprehension scores, the majority of students were not reading with fluency and lacked strength in the foundational literacy skills normally taught in grade 1.

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 practice in foundational skills for reading and mathematics. To measure the impact of the intervention pilot, the 2012 National Survey was treated as a baseline, and an endline survey was conducted in May 2014. The Intervention Impact Report notes that while the percentage of non-readers or beginning readers and non-mathematicians or early mathematicians remained relatively consistent between the baseline and endline for the control group, there were large reductions in the proportion of non-readers or beginning readers and non-mathematicians or early mathematicians in treatment schools (from 32% to 19% in reading and 30% to 22% in mathematics). Additionally, while the proportion of readers and mathematicians remained constant for control schools, both proportions increased significantly in the treatment schools (13% to 24% in reading and 14% to 24% in mathematics). The intervention did exactly what it was intended to do, while there were virtually no gains in control schools from 2012 to 2014, there were significant gains across treatment schools in reducing the proportion of the lowest performers and increasing the proportion of the highest performers.

In 2013 and also in response to the findings of the 2012 National Survey, it was decided to develop a remedial pilot research activity that would enable teachers to provide support to the children in their classes that are performing below the general performance level of the class.

The aim of the remedial pilot research activity was to develop resources to assist teachers to: (1) objectively identify those children performing below the general performance level of the class; (2) describe the performance level of those children who are performing below the general performance level of the class, in terms of the expectations of the syllabus; and (3) provide remedial support to the children performing below the general performance level of the class, by using appropriately targeted materials. In the context of Jordan and with the Syrian refugee situation, one of the additional objectives of the remedial pilot involved developing a diagnostic or

placement tool that schools and teachers can use to determine the grade level at which children joining the school are performing, both for Arabic and for mathematics.

The remedial pilot research activity developed two classroom-based diagnostic tools: (1) a "coarse-grain" tool to be administered by the class teacher to their entire class, with the purpose of identifying the children in the class who are in need of remedial support, and (2) a "fine-grain" tool to be administered by the teacher on an individual basis to each of the children, who were identified by the coarse-grain tool as being in need of remedial support. The fine-grain tool determines the grade level equivalent performance of the child in regard to the expectations of the syllabus. The remedial pilot research activity developed materials for teachers to use in class to provide targeted support to children who were identified as being in need of remedial support.

The remedial pilot research activity was piloted in the first three grades of 41 treatment schools by 308 teachers during the 2014/2015 school year. The piloting activity included training coaches, who then trained teachers, and provided ongoing in-class coaching to these teachers throughout the school year. To determine the impact of the remedial pilot research activity, the diagnostic tools were administered in the first three grades of 16 control schools both at the start and the end of the 2014/2015 school year.

The research questions of the remedial pilot research activity were intended to establish the following:

- Did the children, who were identified as performing below the general performance level of the class, benefit from receiving remedial support?
- Did the range of performance levels between the highest and lowest performing students in a class decrease because the poorer performing children received remedial support?
- What were the factors associated with greater and lesser impact?

More than 10,000 children were assessed using the coarse-grain tool at the start of the 2014/2015 school year. Of these, some 18% were assessed using the fine-grain reading tool, and similarly about 18% were assessed using the fine-grain mathematics tool. Of all the children assessed using the fine-grain tools, approximately one half were assessed both for reading and mathematics.

At the end of the 2014/2015 school year, all of the children in the classes that had been assessed using the coarse-grain tool at the start of the year were again assessed using the coarse-grain tool. In addition, at the end of the school year, all of the children who had been assessed using the fine-grain tool at the start of the school year were again assessed using the fine-grain tool. The analysis in this report is based on the approximately 7,750 children for whom complete data is available.

To answer the first research question: "*Did the children, who were identified as performing below the general performance level of the class, benefit from receiving remedial support?*", the gain in performance level between the performance level of the remedial child at baseline and their performance level at endline was calculated.

To determine the impact of the remedial pilot research activity, the change in performance levels of the treatment children was compared with the change in performance levels of the control children. The trend of the change in performance levels of the control children was regarded as the normal impact of a year of schooling on the performance levels of these children. The difference in the trend between the treatment and control children can be interpreted as the impact of the remedial support that the treatment children received. Both for reading and for mathematics, the data suggests that the remedial children benefited from the remedial support. For reading, 30% more of the children who had been identified as being in need of remedial support improved by one or more performance levels than would have been predicted in the absence of remedial support. For mathematics, the number is 25%.

With the exception of grade 1 mathematics (where the fine grain tool was unable to distinguish between performance at the KG and 1.1 levels), the trend across the grades and for both reading and mathematics is clear—the remedial support that the treatment remedial children received have contributed to a greater improvement in performance levels than would be expected if they had not received the remedial support. For reading, the benefit is reasonably even across the grades: an additional 35% of the grade 1 children, 26% of the grade 2 children, and 23% of the grade 3 children improved their performance level by one or more levels than would have been expected if they had not received remedial support. For mathematics (and ignoring the case of grade 1 children for now), an additional 28% of the grade 2 children and 34% of the grade 3 children improved their performance level by one or more levels than would have been expected if they had not received remedial support.

In addition to determining whether or not the remedial children benefited from the remedial support that they received, it is also important to know what the impact of those children, who needed and received remedial support, was on the class as a whole. To answer this question the change in mean scores on the coarse grain tool was analyzed.. For the control group, the mean from baseline to endline for the grade 1 children shows a marked increase and shows a greater increase for the remedial children than for the non-remedial children. The greater increase for the remedial children may be attributable to the remedial children starting from a lower staring point. However, the same trend is not evident among the children in grades 2 and 3. The grades 2 and 3 children in the control groups demonstrate very little, if any, improvement in mean score from baseline to endline—suggesting that they benefited only very little from the additional year of school, at least in terms of what the coarse-grain tool is able to measure.

With regard to the treatment groups. In all cases, the difference in the mean score between the baseline and endline is more pronounced for the remedial children in the treatment group than it is for the children in the control group. This is encouraging because it demonstrates that the remedial children benefited from the remedial support they received. Moreover, equally as encouraging is the performance improvement of the non-remedial children in the treatment schools. The performance improvement of the non-remedial children in the treatment schools is significantly greater than it is for the non-remedial children in the control schools. For reading: 24% vs. 16% in grade 1, 13% vs. 0% in grade 2, and 9% vs -2% in grade 3, and for mathematics: 19% vs. 5% in grade

2 and 10% vs -1% in grade 3. It is clear that the non-remedial children in the treatment schools also benefited from the remedial pilot research activity. This benefit can, in all likelihood, be attributed to (1) their teachers having been trained on the more effective pedagogies of the remedial pilot research activity and applying these more generally in their teaching, and (2) the improved performance of the remedial children changing the performance profile of the class as a whole.

The sample for the remedial pilot research activity was deliberately selected to take account of the influx of Syrian refugee children into Jordanian schools in recent years. The sample of treatment schools included four different schools types: (1) ordinary public schools (or regular schools)—schools with few or no Syrian refugee children; (2) ordinary public schools with a significant number of Syrian children in the mainstream (mainstream schools); (3) double shift (morning shift) schools—schools with no Syrian refugee children, but reduced teaching hours due to the double shifting; and (4) double shift (afternoon shift) schools—schools for Syrian refugee children, and with reduced teaching hours due to the double shifting.

There is some evidence of a difference in performance for the different school types. In particular for reading, the double-shift morning schools (Jordanian children) saw smaller gains across all three categories (remedial, non-remedial, and overall) than the other schools did, and for mathematics, the double-shift afternoon schools (Syrian refugee children) saw the highest gains across each of the three categories (remedial, non-remedial, and overall), even if the relative gains over the other schools were small. That said, the data from this study is not powerful enough to make claims about the impact or not of Syrian refugee children on the performance of children in the different schools, or for that matter about whether or not the different schools perform differently.

Although the remedial pilot research activity was not focused on gender, it was nonetheless interesting to examine whether or not any evidence existed that the remedial support impacted students differently by gender. Although there are some differences in the actual values and various distributions, in general, it seems there is no strong evidence of a difference in the impact of the remedial pilot by gender. This is significant. The Intervention Impact Report noted that the "intervention was significantly more successful for female students." While the data shows that the mean score of the male students on the baseline coarse-grain tool was slightly lower than that of the female students for both reading and mathematics (30.3% vs. 35.3% for reading and 32.7% vs. 34.9% for mathematics), the increase in the mean score between baseline and endline was either the same for male students and female students or slightly greater for male students than it was for female students (29.1% vs. 26.6% for reading and 26.6% vs. 26.8% for mathematics). When considering the distribution of remedial treatment children, by gender, in terms of those whose performance level improved by one or more levels, those whose performance levels did not change, and those whose performance levels went down by one or more levels from baseline to endline. In much the same way that the mean scores on the coarse-grain tool suggest that the male students benefited from the remedial support as least as much as the female students did so the data also indicate that the male students

benefited from the remedial support at least as much as the female students did, and in the case of mathematics, they possibly benefited more so.

The striking difference in the experience of the male students, when compared with the female students, with the intervention and remedial studies is a cause for reflection. How can it be that in the intervention pilot research study the male students did not seem to benefit from the intervention as much as the female students did, yet in the remedial pilot research study, the male students benefited as least as much as the female students did and maybe more so?

In an attempt to better understand the gender findings of the Intervention Pilot Research Study and, in particular, why male and female students appear to experience their education differently, a small research activity, under the technical leadership of the author of this report, was launched in Jordan in 2015. At the time of the writing of this report, that study was busy with final activities and the findings were not yet available. However, the theme that is emerging from the data of that study is that male and female students appear to need different support and/or management from their teachers. In broad terms, that study is suggesting that when teachers do not pay attention to a particular aspect of the class or school environment, then the male and female students respond differently. A significant difference between the intervention pilot research activity and the remedial pilot research activity is in the way that teachers work with the students in their class. In the Intervention pilot research activity, teachers worked with the whole class and did not pay particular attention to the individual children—at least not as a result of how the activities were designed. By contrast, in the remedial pilot research activity, teachers worked on an almost individual basis with each of the children in the remedial support groups. In the remedial support activities, the male students could not "hide"—they received direct and personal attention from their teachers.

The difference in the nature of teacher interaction with the students in a class for the intervention and for the remedial pilot research activities, as well as the emerging themes from the gender study being conducted in parallel, provides a hint at both why male and female students experience their education differently and how, by providing structure and support, teachers may be able to better support male students in benefiting more from their educational opportunities.

Notwithstanding the positive impact of the remedial research pilot activity there are lessons to be learned. With the exception of the fine-grain mathematics tool that needs to be refined to be able to better differentiate between children performing at the KG and at the 1.1 levels, all developed tools were effective in terms of their purpose suggesting that it is possible to develop tools to do what they remedial activity required of them. Observers of the remedial pilot research activity have questioned whether or not the fine-grain tool might be too complex for teachers to administer. The study suggests that it is not. In their reports about the teachers' implementation of the fine-grain tool, the project coaches reported that teachers implemented the fine-grain tool with a high level of fidelity. Nevertheless, an iPad version of the fine-grain tool was developed this version of the tool made administration easier for the teachers because the

decision rules were programmed into the iPad application, hence reducing human error in the interpretation of results.

The remedial pilot research activity developed seven sets of remedial materials for reading and seven sets of remedial materials for mathematics—one set of materials for each of the seven different grade-equivalent performance levels. These remedial materials achieved their purpose suggesting that (1) it is possible to develop materials that teachers can use to provide effective remedial support to children and, more generally, that (2) teachers who are exposed to more research-based pedagogies for reading and mathematics are associated with children who perform better.

The greatest challenge that teachers experienced during the remedial pilot research activity was in conducting the remedial support sessions (mini-lessons) with those children identified as being in need of remedial support. In their training, teachers were presented with three different possible models for implementing the mini-lessons with the groups of remedial children: (1) in-class implementation, (2) before or after school implementation or during school breaks; or (3) using the teacher in charge of the learning resources room to conduct the mini-lessons. In practice, every teacher chose the in-class implementation model. That is, they conducted the mini-lessons during regular classroom time. The challenge that this presented was not the management of the mini-lessons. Most teachers managed the mini-lessons with relative ease. The challenge was in keeping the other children in the class productively engaged. Teachers did not, in general, have experience in providing differentiated support to children and, in particular, in working with a subset of the class, while providing the rest of the class with work that they could complete independently. Much of the in-class support by the project coaches, as well as the additional training that teachers received at the start of the second semester, was focused on developing effective strategies for engaging the rest of the class in meaningful tasks that supported the lesson outcomes and which allowed the children to work independently. At the same time, much of the coaching and training was devoted to creating classroom cultures (discipline structures) that enabled this differentiated teaching to take place. In future remedial activities implementations, more attention will need to be devoted from the start to developing the teachers' skills in creating the necessary classroom culture and in creating activities that keep the other children in the class productively engaged.

In designing the remedial pilot research activity, a conscious decision was made to employ external project coaches to conduct the teacher training and provide the in-class support. The reason was quite simply an awareness that the nature of the activity—providing differentiated support to the children in a class—was such a dramatic departure from teachers' typical practice and that they would need intensive and ongoing support to implement the program with fidelity. In the Intervention pilot research activity, where MoE Supervisors were used to provide the training and in-class coaching, it was found that fewer than 8% of the teachers received the requisite number of visits (12 to 16 visits in the year); 16% of the teachers received between one half and three quarters of the expected visits; 28% of the teachers received between one quarter and one half of the number of expected visits; and 48% of teachers (nearly one half of the participating teachers) received less than one quarter (25%) of the number of visits

expected in terms of the activity design. The reason for this is quite simply that MoE supervisors are very busy people, and they have a wide range of responsibilities that get in the way of being able to visit teachers as frequently as the activity may require. The benefit of using external project coaches is evident in that more than 90% of the teachers in the remedial pilot research activity were visited as often as was required. To maximize the impact of a project, the benefits of using external project coaches should be considered.

In conclusion, the remedial pilot research activity has been successful in developing the early grade remedial programs for reading and mathematics that the Ministry of Education identified as a need in response to the 2012 National Survey. It remains now for the MoE to implement the program in all schools across the Kingdom. It is anticipated that this will form part of the Early Grade Reading and Mathematics Initiative (RAMP) that is being implemented by the MoE between 2015 and 2019.

1 Background

1.1 2012 National Survey

To gain insight into student facility with foundational skills and to better understand characteristics among Jordanian schools that are associated with student performance, USAID/Jordan, in partnership with the Jordan Ministry of Education (MoE), contracted with RTI International in 2011 under the Education Data for Decision Making (EdData II) project to conduct the Snapshot of School Management Effectiveness (SSME), including the Early Grade Reading Assessment (EGRA) and Early Grade Mathematics Assessment (EGMA), in a sample of primary schools in Jordan at the end of the 2011/2012 school year. The hope was that evidence-based information resulting from the survey could inform future education policy decisions, as needed.

The report on the National Survey of 2012 (Brombacher et al) [1] indicated that although students were quite comfortable with some of the procedural mathematics skills, their conceptual understanding needed to be strengthened. Similarly, although some students were reading with a high level of fluency and understanding and achieving 80% or more on their comprehension scores, the majority of students were not reading with fluency and lacked strength in the foundational literacy skills normally taught in grade 1.

1.2 2013/2014 Intervention Pilot and 2014 National Survey

In response to the findings of the 2012 National Survey, it was decided, after discussions with the MoE Curriculum Team and Senior Reading and Mathematics Supervisors, to develop an intervention pilot program that would support teachers in providing deliberate, structured, and developmentally appropriate daily practice in foundational skills for reading and mathematics.

The intervention was implemented during the 2013/2014 school year by more than 400 teachers in 347 classrooms across 43 schools, reaching approximately 12,000 students.

To measure the impact of the intervention pilot, the 2012 National Survey was treated as a baseline, and an endline survey was conducted in May 2014. The Intervention Impact Report (Brombacher et al)[2] notes that while the percentage of non-readers or beginning readers and non-mathematicians or early mathematicians remained relatively consistent between the baseline and endline for the control group, there

[1] Brombacher, A., P. Collins, C. Cummiskey, E. Kochetkova, and A. Mulcahy-Dunn. 2012. *Student Performance in Reading and Mathematics, Pedagogic Practice, and School Management in Jordan*. Prepared by RTI International for USAID. Available at https://www.eddataglobal.org/countries/index.cfm?fuseaction=pubDetail&ID=425

[2] Brombacher, A., J. Stern, L. Nordstrum, C. Cummiskey, and Amy Mulcahy-Dunn. 2014. *Jordan Intervention Impact Analysis Report*. Prepared by RTI International for USAID. Available at https://www.eddataglobal.org/math/index.cfm?fuseaction=pubDetail&id=794

were large reductions in the proportion of non-readers or beginning readers and non-mathematicians or early mathematicians in treatment schools (from 32% to 19% in reading and 30% to 22% in mathematics). Additionally, while the proportion of readers and mathematicians remained constant for control schools, both proportions increased significantly in the treatment schools (13% to 24% in reading and 14% to 24% in mathematics). The intervention did exactly what it was intended to do. In summary, while there were virtually no gains in control schools from 2012 to 2014, there were significant gains across treatment schools in reducing the proportion of the lowest performers and increasing the proportion of the highest performers. The results of the intervention were extremely promising, particularly because the intervention was implemented for only one school year.

1.3 Remedial Pilot Description and Components

1.3.1 Rationale and Description

In 2013 and also in response to the findings of the 2012 National Survey, it was decided, at the request of the MoE, to develop an remedial pilot research activity that would enable teachers to provide support to the children in their classes that are performing below the general performance level of the class.

In a typical school class, and for most subjects, children will be at different stages of development in terms of the developmental trajectory implied by the syllabus. In general, a class will be composed of children who are performing beyond, performing at, or performing below the level that the syllabus expects them to be. Children performing below the level of curriculum expectation are at risk of falling increasingly further behind their classmates, who are performing at or beyond the level of curriculum expectation, because children performing below the expected level are unlikely to receive support to close the gap. This is particularly true in the context of a country like Jordan, where teachers follow a national curriculum (textbook) with all classes in the Kingdom being on the same page on the same day. Thus, if a child is performing at a level that the syllabus associates with an earlier grade level, it is unlikely that this child will receive instruction at the child's developmental level. That child will almost certainly not be able to participate effectively in the activities of the class, because these are beyond the child's developmental level.

The aim of the remedial pilot research activity was to develop resources to assist teachers to: (1) objectively identify those children performing below the general performance level of the class; (2) describe the performance level of those children who are performing below the general performance level of the class, in terms of the expectations of the syllabus; and (3) provide remedial support to the children performing below the general performance level of the class, by using appropriately targeted materials. In the context of Jordan and with the Syrian refugee situation, one of the additional objectives of the remedial pilot involved developing a diagnostic or placement tool that schools and teachers can use to determine the grade level at which children joining the school are performing, both for Arabic and for mathematics.

In this context, the remedial pilot research activity developed two classroom-based diagnostic tools: (1) a "coarse-grain" tool to be administered by the class teacher to their entire class, with the purpose of identifying the children in the class who are in need of remedial support, and (2) a "fine-grain" tool to be administered by the teacher on an individual basis to each of the children, who were identified by the coarse-grain tool as being in need of remedial support. The fine-grain tool is more detailed and nuanced than the coarse-grain tool; in particular, the fine-grain tool determines the grade level equivalent performance of the child in regard to the expectations of the syllabus. It is this feature of the fine-grain tool that also allows for it to be used as a placement tool.

In addition to developing the diagnostic tools, the remedial pilot research activity developed materials for teachers to use in class to provide targeted support to children who were identified as being in need of remedial support. The intention was that teachers would, on a regular basis (once to twice per week), work with the children in need of remedial support, using activities appropriate to their grade equivalent performance level to address the gaps identified by the diagnostic tools.

As with the materials and activities of the intervention pilot, the diagnostic tools and teaching materials developed for the remedial pilot research activity focused on the foundational skills for Arabic reading and for mathematics—foundational skills that research has shown to be predictive of future success in reading[3], [4], [5], [6] and mathematics[7], [8].

The remedial pilot research activity was piloted in the first three grades of 41 treatment schools by 308 teachers during the 2014/2015 school year. The piloting activity included training coaches, who then trained teachers, and provided ongoing

[3] Saiegh-Haddad, E. 2005. Correlates of reading fluency in Arabic: Diglossic and orthographic factors. *Reading and Writing: An Interdisciplinary Journal, 18,* 559–582. See also Taouk, M. and M. Coltheart. 2004. The cognitive processes involved in learning to read in Arabic. *Reading and Writing: An Interdisciplinary Journal, 17,* 27–57.

[4] Abu-Rabia, S. 2007. The role of morphology and short vowelization in reading Arabic among normal and dyslexic readers in grades 3, 6, 9, and 12. *Journal of Psycholinguistic Research, 36,* 89–106.

[5] Elbeheri, G., J. Everatt, A. Mahfoudhi, M. A. Al-Diyar, and N. Taibah. 2011. Orthographic processing and reading comprehension among Arabic speaking mainstream and LD children. *Dyslexia, 17*(2): 123–142. doi: 10.1002/dys.430

[6] National Institute of Child Health and Human Development. 2000. *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (National Institutes of Health Publication No. 00-4769). Washington, DC: U.S. Government Printing Office. See also Perfetti, C.A. 1992. The representation problem in reading acquisition. In P.B. Gough, L.C. Ehri, and R. Treiman (Eds.), *Reading acquisition* (pp. 145–174). Hillsdale, NJ: Erlbaum.

[7] Baroody, A. J., M.-L. Lai, and K. S. Mix. 2006. The development of number and operation sense in early childhood. In O. Saracho & B. Spodek (Eds.), *Handbook of research on the education of young children* (pp. 187–221). Mahwah, NJ: Erlbaum; and Chard, D. J., B. Clarke, S. Baker, J. Otterstedt, D. Braun, R. Katz. 2005. Using measures of number sense to screen for difficulties in mathematics: Preliminary findings. *Assessment for Effective Intervention, 30(2),* 3–14; and Clements, D. and J. Samara. 2007. Early Childhood mathematics learning. In F.K. Lester, Jr. (Ed.), *Second handbook on mathematics teaching and learning* (pp.461–555). Charlotte, NC: Information Age.

[8] Baroody et al. 2006; Clements and Samara. 2007; and Foegen, A., C. Jiban, and S. Deno. 2007. Progress monitoring measures in mathematics: A review of literature. *The Journal of Special Education, 41*(2), 121–139.

in-class coaching to these teachers throughout the school year. To determine the impact of the remedial pilot research activity, the diagnostic tools were administered in the first three grades of 16 control schools both at the start and the end of the 2014/2015 school year.

The research questions of the remedial pilot research activity were intended to establish the following:

- Did the children, who were identified as performing below the general performance level of the class, benefit from receiving remedial support?
- Did the range of performance levels between the highest and lowest performing students in a class decrease because the poorer performing children received remedial support?
- What were the factors associated with greater and lesser impact?

1.3.2 Materials

The materials for the remedial pilot research activity were developed by two teams of writers, one for reading and one for mathematics. Each consisted of at least one MoE representative and a number of materials developers from various organizations. RTI appointed one technical expert per subject to provide leadership and guidance to the teams during the materials development process. These were the same technical experts responsible for leading the development of the materials for the 2013/2014 pilot intervention activity. In addition, RTI partnered with the Queen Rania Teacher Academy (QRTA) for the materials development process, with the technical experts from QRTA working with the RTI experts to manage the development process. Furthermore, and because there are a number of agencies working in Jordan, who are providing remedial support across the education sector, representatives from a range of such agencies were invited to be part of the materials development activity. Relief International, Norwegian Refugee Council (NRC), The Association of Volunteers in International Service (AVSI), and United Nations Children's Fund (UNICEF) participated throughout the development process.

Coarse-grain diagnostic tool

The coarse-grain diagnostic tool was developed so that it could be administered by a teacher to the whole class. The EGRA and EGMA instruments used in the national surveys are oral assessments that are individually administered, allowing for the targeted skills to be assessed without being confounded by problems with reading instructions or writing that might otherwise impede performance. The challenge in developing the coarse-grain diagnostic tool was to develop an instrument that could be administered to a group (class), while still ensuring that problems that children may have with reading instructions or writing answers would not impede the measuring of the targeted skills.

The coarse-grain tools that were developed consist of a student sheet and an administrator (teacher) sheet. On the student sheet, the student was presented with a range of stimuli in numbered boxes. In administering the assessment, the

administrator (teacher) followed the instructions in the administrator sheet and guided the students to each consecutive stimulus box, described the task to be completed, and monitored the children in the class as they completed the task before moving to the next item. For many of the items, the children either had to circle the most appropriate answer or write down an answer, for example the solution to an addition problem in mathematics.

Figures 1a and 1b[9] show the relationship between the student and administrator sheets for the grade 2 and 3 coarse-grain mathematics tool. The full set of coarse-grain diagnostic tools are supplied in **Annex A**.

Different coarse-grain tools were developed for grade 1 and grades 2 and 3, both for reading and for mathematics. The coarse-grain tools were designed to be marked by the administrator (teacher) to identify the children in each class whose performance was below the general performance level of the class. For the purpose of the remedial pilot research activity, "below the general performance level of the class" was interpreted as either the poorest performing 20% or the eight poorest performing children in the case of a class with more than 40 children.

Fine-grain diagnostic tool

The fine-grain diagnostic tool was developed as an oral assessment to be individually administered, allowing for the targeted skills to be assessed without being confounded by problems with reading instructions or writing that might otherwise impede performance. Both the reading and mathematics fine-grain tools assessed grade level equivalent performance on selected foundational skills. In the case of Arabic reading, the assessed skills included: vocabulary, letter sounds, phonemic awareness, oral reading and comprehension, and writing. For mathematics, the assessed skills included: operations with numbers, manipulating numbers, comparing and ordering numbers, reading and writing numbers, and pattern completion. For the mathematics fine-grain tool, it was intended to also develop a counting subtask; however, this was not done, and the need to still do so will be discussed in the analysis section of this report.

The fine-grain diagnostic tool developed by the remedial pilot activity is a sophisticated diagnostic tool. The aim of the tool is to determine the grade level equivalent performance of each child at one of seven different grade levels, ranging from kindergarten (KG) to grade 1 semester1 (1.1), grade 1 semester 2 (1.2), and so on, up to grade 3 semester 2 (3.2). To do so, the tool consists of a number of grade-level appropriate assessment items (ranging from 6 to 12, or more) for each grade level (KG to 3.2) and each skill being assessed. However, for some skills, items do not exist at all seven grade levels because the syllabus does not expect children to be performing the skills at those grade levels. ***Figure 2*** illustrates the skills and the grade levels for which assessment items exist in the fine-grain tool.

[9] The instructions in the illustrated tools have been translated from Arabic into English for the benefit of the reader.

Figure 1a. An extract from the administrator sheet for the grade 2 and 3 coarse-grain tool for mathematics

Put your finger on the box with the number "2"

Circle the symbol that represents the number three-quarters

2	$\frac{٣}{٤}$	$\frac{٤}{٣}$	$\frac{٢}{٤}$

Put your finger on the box with the number "3"

Circle the word for the number 37

3	سبع وثلاثون	ثلاث وسبعون	سبع وعشرون

Put your finger on the box with the number "4"

Complete the pattern with the missing number

٣٠ ، ٢٥ ، ☐ ، ١٥

4	٤٠	٢٠	١٠

Figure 1b. An extract from the administrator sheet for the grade 2 and 3 coarse-grain tool for mathematics

2	$\frac{٣}{٤}$	$\frac{٤}{٣}$	$\frac{٢}{٤}$

Circle the word for the number 37

3	سبع وثلاثون	ثلاث وسبعون	سبع وعشرون

Complete the pattern with the missing number

٣٠ ، ٢٥ ، ☐ ، ١٥

4	٤٠	٢٠	١٠

Figure 2. Skill and grade levels for which fine-grain assessment items were developed

Reading	KG	1.1	1.2	2.1	2.2	3.1	3.2
Vocabulary	■	■	■				
Letter sounds	■						
Phonemic awareness							■
Oral reading and comprehension	■	■					
Writing							

Mathematics	KG	1.1	1.2	2.1	2.2	3.1	3.2
Operations with numbers	■	■					
Manipulating numbers	■						
Comparing and ordering numbers	■						
Reading and writing numbers							
Pattern completion	■	■	■				

A single fine-grain tool was developed for reading and a single fine-grain tool was developed for mathematics. Both fine-grain diagnostic tools are supplied in **Annex A**.

The fine-grain tool is administered to children individually. The administrator (teacher) needs a copy of the fine-grain tool and a set of stimulus sheets. At the start of the 2014/2015 school year, the administrators (teachers) used paper copies of the fine-grain tool; at the end of the school year, an electronic iPad-based version of the tool had been developed and was used by the administrators.

Administering the fine-grain tool involves following a series of well-defined decision rules. The administration is described in the steps below:

1. The age of the child determines the starting grade level for the first skill. For children up to seven years of age, the assessment starts with the level 2.1 task. For children age eight or above, the assessment starts with the level 3.1 task.
2. For each grade-level task, the administrator (teacher) explains the task to the child and scores the child's response (correct [✓]/incorrect [✗]) for each item.
3. On completion of a grade-level task, the administrator (teacher) follows one of the following decision rules:
    - If the child achieves less than a given score for the task (typically about one-third of the items correct), the administrator then administers the task for the same skill, but at the next lower grade level.
    - If the child achieves more than a given score for the task (typically about two-thirds of the items correct), the administrator then administers the task for the same skill, but at the next higher grade level.
    - If the child achieves a score within a given range for the task (typically more than one-third and less than two-thirds of the items correct), the administrator stops assessing that skill and starts assessing the next skill at the grade level on which the child ended the current skill.

(***Figure 3*** illustrates a possible set of child's responses and the corresponding decisions for a child being assessed for the manipulating numbers skill.)

4. At the conclusion of the assessment, the assessor records in the summary table the grade level at which the child stopped for each skill.
5. Finally, the assessor records on the summary table, the grade level equivalent of the child's performance, by determining the grade level at which the child performed most frequently. ***Figure 4*** illustrates a possible summary table for a child for the fine-grain reading tool.

Figure 3. A possible set of responses and the corresponding decisions for a child being assessed for the manipulating numbers skill

1.2		2.1		2.2		3.1	
✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮	
Question	✍	Question	✍	Question	✍	Question	✍
🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:	
[٩]= ٧ + ٢		٥٧ = ٥٠ + [٧]	✓	٧٠ = ٦٦ + [٤]	✓	[١٩٠] = ١ + ١٨٩	✓
[٣] = ٥ – ٨		٤٠ = [٩] – ٤٩	✓	٨٠ = ٨ – [٨٨]	✓	[١١٣] = ٥ + ١٠٨	✓
[٣٦] = ٦ + ٣٠		٩٠ = [٣] + ٨٧	✓	[١٨٠] = ٧ + ١٧٣	✓	٦ + [٢٠] + ١٠٠ = ١٢٦	✘
[٤٠] = ٦ – ٤٦		٧٠ = [٥] – ٧٥	✓	١٥٠ = [٩] – ١٥٩	✓	[١٠٠] = ٤٤ + ٥٦	✓
[١٠] = ٢ + ٨		[١٠٣] = ٣ + ١٠٠	✓	[١٥٣] = ١٠٠ + ٥٠ + ٣	✓	١٠٧ = [٦٠] – ١٦٧	✘
٩٣ = [٣] + ٩٠		[٢٤] = ٦ + ١٨	✓	[١٠٠] = ٤٠ + ٦٠	✘	[٢١٠] = ٨٠ + ١٣٠	✘
Total (6)		Total (6)	6	Total (6)	5	Total (6)	3
Total < 3: 1.1		Total < 3: 1.2		Total < 3: 2.1		Total < 3: 2.2	
Total > 4: 2.1		Total > 4: 2.2	✓	Total > 4: 3.1	✓	Total > 4: 3.2	✓
Stop and go to comparing and ordering of numbers 1.2		Stop and go to comparing and ordering of numbers 2.1		Stop and go to comparing and ordering of numbers 2.2		Stop and go to comparing and ordering of numbers 3.1	✓

Figure 4. A possible summary table for a child for the fine-grain reading tool

Reading	KG	1.1	1.2	2.1	2.2	3.1	3.2
Vocabulary					✓		
Letter sounds				✓			
Phonemic awareness				✓			
Oral reading and comprehension			✓				
Writing				✓			
Grade level equivalent of the child's performance				✓			

Remedial teaching and learning materials

In addition to the diagnostic tools developed for the remedial pilot research activity, remedial teaching and learning materials were also developed to support the teacher in remediating the gaps in foundational reading and/or mathematics skills identified by the fine-grain diagnostic tool.

The teaching and learning materials for the remedial pilot research activity were based on the materials developed for the 2013/2014 intervention pilot and consisted of: (1) a teacher's guide, (2) lesson notes for between 20 to 24 mini-lessons (about 15 minutes each) at each of the seven grade levels (KG to 3.2), and (3) student workbooks for each of the seven grade levels. The teaching and learning materials, together with the diagnostic assessment tools, were packaged in a ring binder, and a separate ring binder was developed for reading and for mathematics.

The rationale for the design of the teaching and learning materials was that once a teacher has determined the performance level(s) of the children in the class who are performing below the general performance level of the class, the teacher will, on a regular basis (once to twice per week), conduct a mini-lesson of about 15 to 20 minutes for these children, targeted at their actual performance level. Given that the expectation is that teachers will work with the children in need of remedial support at least once or twice a week, and further that a typical semester is about 12 weeks, it was decided to develop coherent units of about 20 to 24 mini-lessons.

Teacher's guide. The teacher's guide for each subject was the same as the teacher's guide already developed for the intervention pilot. It provides a resource to provide teachers with both a pedagogical rationale for the foundational skills teaching approach that was adopted in the intervention and remedial activities, as well as with guidance for how to conduct the different teaching activities associated with the different foundational skills (***Tables 1a and 1b***). The teacher guide, previously developed for the intervention pilot, was refined for the remedial pilot by the writing teams and is based on the feedback from the intervention activity.

The teacher's guide for each subject includes detailed notes explaining why each of the skills targeted in the remedial activities is critical (foundational) for students' development of reading and mathematics skills. Although the notes are not as comprehensive as they would be if they were part of a university course or a textbook chapter on the importance of the skills, they do provide sufficient background to encourage the teachers to include the approach in their general teaching approach.

In addition to notes on the importance of the skills targeted by the remedial pilot research activity, the guide also provides clear guidance on how to conduct each of the different teaching activities for each of the foundational skills. For the activities associated with each foundational skill to be conducted with fidelity, teachers need to have clarity about what is expected of them as they conduct these activities. The teacher notes were, therefore, designed to provide a comprehensive guide about how to conduct and manage each of the activities—a series of mini-scripts, one for each activity.

Table 1a. Reading skills and the associated teaching and learning activities

Skill	Activities
Phonemic awareness:	• Distinguishing sounds • Blending sounds • Manipulating sounds
Letter sounds:	• Letter sounds with a short diacritic • Letter sounds with a long diacritic • Distinguishing between short and long diacritics • Blended words
Vocabulary:	• Contextualized words • Word families • Synonyms • Elaborating adjectives • Vocabulary networking
Comprehension:	• Predicting the title of a story based on the illustration of the story • Predicting the title of a story based on the text of the story • Summarizing • Self-regulation • Responding both to recall and to inferential questions
Writing:	• Writing letters • Writing words • Writing sentences • Functional writing • Creative writing

Table 1b. Mathematics skills and the associated teaching and learning activities

Skill	Activities
Rote counting:	• Counting in ones • Counting rhymes and songs • Counting in steps
Rational counting:	• Counting small sets of counters in ones • Counting out small groups of counters • Estimating and counting larger sets of counters in ones • Counting in groups • Counting large sets of counters in groups
Manipulating numbers:	• Single digit arithmetic • Arithmetic with multiples of ten, hundreds, and thousands • Completing tens (hundreds and thousands), including adding to and subtracting from multiples of ten • Bridging tens (hundreds and thousand) • Doubling and halving

Skill	Activities
Solving problems:	Problems that support the development of: • Addition and subtraction (change, combine, and compare problems) • Division (sharing and grouping) • Multiplication (repeated addition and situations with a grid- or array-type structure) • Fractions, ratio, rate, and proportion, including sharing in a ratio

Lesson notes. Lesson notes for 20 to 24 mini-lessons of about 15 minutes each were developed for each of the seven grade levels (KG to 3.2). These were filed as units in the ring binder with the teaching notes and the corresponding page from the student book on facing pages.

For each mini-lesson of the unit, the skills to be included in the mini-lesson are listed, as well as the activities to be used to develop each skill. Furthermore, details are provided for each activity with the letters or words, numbers, and problems to be used during the activity. ***Figure 5*** illustrates a typical pair of facing pages for a mini-lesson.

Figure 5. A typical pair of facing pages for a mini-lesson in the unit for mathematics at level 2.2

Teachers are expected to use the lesson notes to guide the contents and to structure the remedial mini-lessons. It is expected that teachers would plan for the mini-lesson by referring to the lesson notes and identifying the skills to be addressed in the 15 minutes and, in particular, identifying the activities to be used to develop those skills. Teachers would then refer to the teacher's guide to remind themselves of how to conduct the activity and would think about how to do that for the particular letters/words/numbers/ problems targeted on that day. Because there are a finite number of activities for each skill, it was hoped that over time, the teacher would need to refer to the teacher's guide less frequently for how to conduct the activity.

In developing the lesson notes, the writing teams first developed scope and sequence maps for the seven units (KG to 3.2) and for the 20 to 24 mini-lessons in each unit, to ensure that the range of foundational skills to be practiced through the mini-lesson were appropriate for the performance level being targeted. The scope and sequence were, in effect, a developmental trajectory for the foundational skills.

Workbooks. In addition to the resources already described (teacher's guide and seven units of 20 to 24 mini-lessons) that enable the teacher to conduct lessons targeted to the needs of the children in the remedial group(s), it was decided to also develop a series of workbooks. It was expected that the workbooks would provide a source of independent work for the remedial children. That is, in addition to the mini-lessons provided by the teacher, the workbook would engage the children in independent practice of the skills that the teacher had worked on with them during the mini-lesson. The workbook provided an "additional resource" for teachers and students. It was not expected that the workbook should be used as part of the 15 minute mini-lesson, but instead that the workbook could be used at another time when the teacher wanted to assign work for the students, or as homework. Workbooks were developed for each of the developmental levels from 1.1 to 3.2. It was decided not to develop a workbook for children at the KG performance level.

1.3.3 Training and Support

In contrast to the approach of the intervention pilot, where the training and ongoing support of teachers was carried out exclusively by MoE supervisors with technical support from RTI, it was decided to use project coaches for the remedial pilot research activity. This decision was made for two reasons: (1) the nature of the remedial pilot research activity is so different from anything that teachers in the early grades have previously done, such that sustained coaching support would be critical; and (2) during the intervention pilot, the MoE supervisors had shown that they did not have enough time to be able to visit teachers at least once every two weeks. For the purposes of training and support, RTI partnered with ChangeAgent for Arab Development and Education Reform (CADER).

Training was conducted in two stages: (1) training of trainers and (2) training of teachers. The training of trainers (CADER coaches) was provided by the RTI technical experts, while the training of teachers was provided by the CADER coaches. Teacher training occurred in two sets. The first set was held at the start of the first semester of the 2014/2015 school year, and the second set was held at the start of the

second semester. Teacher training was typically conducted over a number of weeks, with training taking place in the afternoons after school.

First semester training

Training for the first semester of the 2014/2015 school year focused on the structure of the remedial activity. The training involved extensive modelling and practicing, both of the diagnostic tool administration and of the different activities associated with each of the reading and mathematics skills.

Training for the first semester also focused on three different possible models for implementing the mini-lessons with the groups of remedial children, namely: (1) in-class implementation, (2) before or after school or during school breaks; and (3) by using the teacher in charge of the learning resources room.

***In-class implementation*.** In this model, the class teacher is responsible for implementing the remedial activity during the lesson, with the remedial reading lesson taking place during the scheduled Arabic lessons and the remedial mathematics lessons being implemented during the mathematics class. To do so, the teacher must allocate a place in the class to work with the remedial group, for example, one table or a set of chairs or a number of chairs placed in a particular order. While the teacher works with the remedial children, productive work should be set for the rest of the class. The other children should work independently during the time of the remedial lesson, either individually or in pairs or groups. The work should reinforce the lessons of the Arabic or mathematics class. During the Arabic lesson, this could involve children reading or working on consolidation or enrichment worksheets. During the mathematics lesson, children could be solving problems from the textbook, a worksheet, or problems written on the chalkboard by the teacher.

***Before or after school or during the breaks*.** In this model, the school principal and the class teacher should advise the parents of children in the remedial groups about the need for their children to come early to school or to stay after school hours. The main challenge of this option is overcoming the negative attitudes of the children in the remedial groups to coming early or staying after school or missing their breaks.

***Using the teacher in charge of the learning resources room*.** If the school has a learning resources room and a specialized teacher to manage its activities, this teacher could be responsible for conducting the remedial lessons with the remedial students.

Finally, training for the first semester also focused on the importance of the school administration and early grade teachers to communicate with the parents of the remedial children about the goals of the program before implementing it. This communication could include meeting with the parents to explain the criteria for selecting students and the mechanism for implementing the program. In the same way, teachers also should be reminded of the importance of creating a positive class environment that not only helps all the students to be more understanding and considerate about some of their classmates needing special support to achieve learning, but also that discourages any sort of teasing or bullying of the children receiving remedial support.

Second semester training

A second round of training was held before the start of the second semester. This second round of training focused on issues and concerns that had arisen during the first semester, in particular on strategies for keeping the children not in the remedial group productively engaged while the teacher was conducting a mini-lesson with the children in the remedial group.

Ongoing classroom support

In addition to the training that coaches provided to teachers, they also provided in-class coaching and support and coordinated a monthly reflection session among the participating teachers in their district.

Coaches visited participating teachers at their schools to observe and support them in implementing the remedial program. Coaches were encouraged to visit each school at least once every two weeks. For each visit, the coaches completed an observation form and submitted an encoded summary of that form to the project staff via short message service (SMS). These SMS, and the data they contained, provided the project staff with a monitoring mechanism that not only allowed them to know which teachers were being visited how often and by which coach, but also allowed them to monitor the quality of implementation.

Finally, in addition to the school visits, coaches also arranged a monthly meeting with the participating teachers from the schools for which they were responsible.

1.4 Implementation

The remedial pilot research activity was piloted in the first three grades of 41 treatment schools by 308 teachers during the 2014/2015 school year. To determine the impact of the remedial pilot activity, the diagnostic tools were also administered in the first three grades of 16 control schools, both at the start and at the end of the 2014/2015 school year.

The schools in the remedial pilot research activity were selected in cooperation with the MoE, so that the sample would consist of at least 40 treatment schools and 15 control schools—i.e., approximately 45 to 60 schools in total. The schools were selected as follows:

- The MoE identified at least 15 **double shift schools**—with each shift being treated as a separate school. From these 30 schools:
  - 20 schools were selected as treatment schools, and
  - 8 schools from the remaining 10 schools were selected as control schools.
- The MoE identified at least 15 **mainstream schools**—schools with a reasonable percentage of Syrian students. From these schools:
  - 10 schools were selected as treatment schools, and
  - 4 schools from the remaining 5 schools were selected as control schools.

- The MoE identified at least 15 **regular schools**—schools which did not necessarily have any Syrian students enrolled in the school. From these schools:
  - 10 schools were selected as treatment schools, and
  - 4 schools from the remaining 5 schools were selected as control schools.

In selecting the schools for the remedial pilot research activity, efforts were also made to ensure that:

- These schools were clustered in districts with about 4 to 6 treatment schools and 1 to 2 control schools in a district—i.e., about 6 to 7 schools per district and about 9 districts in total.
- Ideally, the remedial pilot research activity would be conducted in schools where there was no other project/similar activity in the school—in particular not in grades 1 to 3. The schools that had been involved in the intervention pilot activity were specifically excluded from this activity.
- Each selected school had at least one class in each of the grades—preferably two.

2 Findings

2.1 Descriptive Statistics

Table 2 summarizes the characteristics of the children in the remedial pilot research activity. In treatment schools, all of the children in each grade 1, 2, and 3 class, and in control schools, all of the children in a single class per grade 1, 2, and 3, were assessed using the coarse-grain tool at the start of the 2014/2015 school year. Both in treatment and in control schools, the poorest performing 20% of the children in the class (or the eight poorest performing children in the case of a class with more than 40 children) were also assessed using the fine-grain tool. In treatment schools, these children also received remedial support at their identified performance level. For the purposes of analysis, the children who were assessed using the fine-grain tool are referred to as remedial children, whether they received remedial support (treatment schools) or not (control schools), and the other children are referred to as non-remedial children.

Table 2. Descriptive statistics of the children in the study

		Non-remedial children		Remedial children		Total	
		Complete data	Incomplete data	Complete data	Incomplete data		
Reading	**Control**	791	242	241	116	1,390	10,375
	Treatment	5,496	1,921	1,222	346	8,985	
Mathematics	**Control**	840	192	266	92	1,390	10,275
	Treatment	5,361	1,999	1,218	307	8,885	

More than 10,000 children were assessed using the coarse-grain tool at the start of the 2014/2015 school year. Of these, some 18% were assessed using the fine-grain reading tool, and similarly about 18% were assessed using the fine-grain mathematics tool. Of all the children assessed using the fine-grain tools, approximately one half were assessed both for reading and mathematics.

At the end of the 2014/2015 school year, all of the children in the classes that had been assessed using the coarse-grain tool at the start of the year were again assessed using the coarse-grain tool. In addition, at the end of the school year, all of the children who had been assessed using the fine-grain tool at the start of the school year were again assessed using the fine-grain tool. Due to a range of factors, including absence on the testing days, children leaving the schools, and some difficulties with data management across the many data sets associated with this study, complete data is available for approximately 75% of the children who were assessed at the start of the school year. Complete data means having both baseline and endline coarse-grain test data for the non-remedial

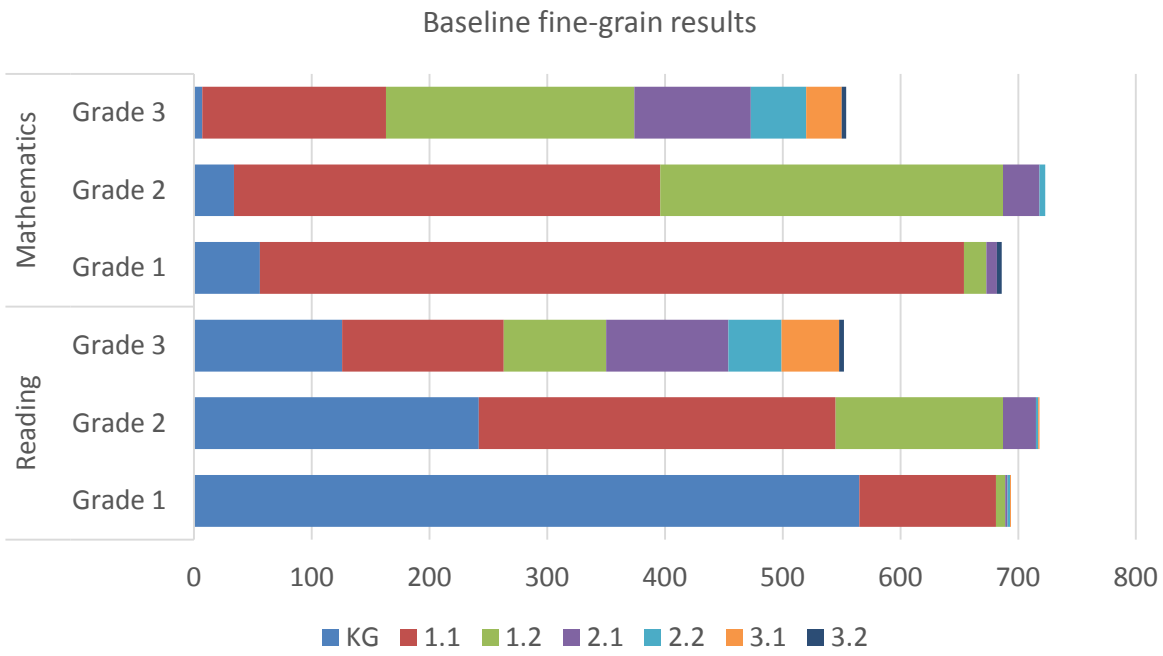
children and both baseline and endline coarse-grain and fine-grain test data for the remedial children. The analysis in this report is based on the approximately 7,750 children for whom complete data is available.

2.2 Remedial Activity Impact on the Remedial Children

Figure 6 summarizes the distribution by performance level, as determined by the fine-grain tool for the 1,925 children assessed for reading and 1,883 children assessed for mathematics using the fine-grain tool at baseline.

For reading, 89% of children assessed using the fine-grain tool were found to be performing at a performance level that was one or more levels below their grade level, 10% were found to be performing at their grade level, and only 1% were found to be performing above their grade level. Given that the remedial research activity was as much about developing a tool that could determine the level of the grade level equivalent performance of a child using the fine-grain diagnostic tool as it was about researching the impact of the remedial activity itself, the results for the fine-grain reading tool are most encouraging.

Figure 6. Distribution of remedial students across the performance levels at baseline, by grade



For mathematics, 64% of children assessed using the fine-grain tool were found to be performing at a performance level that was one or more levels below their grade level, 34% were found to be performing at their grade level, and 2% were found to be performing above their grade level. In contrast to the fine-grain reading tool, it would appear as if the fine-grain mathematics tool was not sensitive enough to correctly identify the children performing at the KG level. This is almost certainly because the

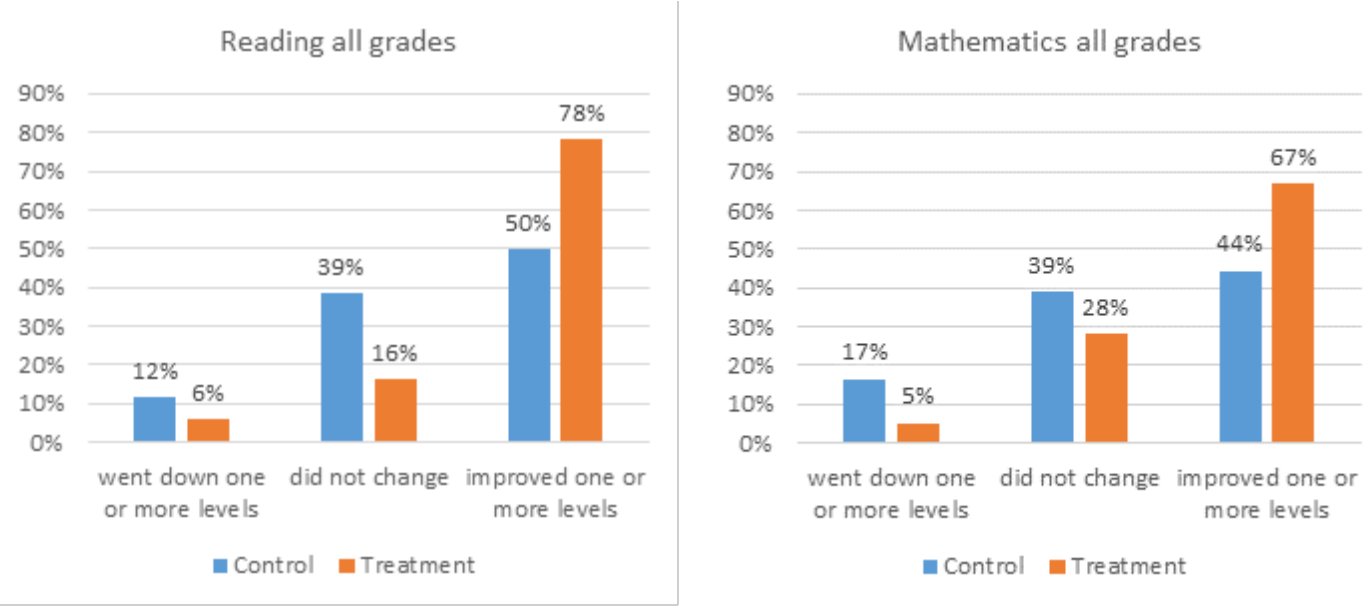
counting subskill was not included in the tool. Thus, the tool will need to be revised accordingly before it is used more widely.

To answer the first research question: "*Did the children, who were identified as performing below the general performance level of the class, benefit from receiving remedial support?*", the gain in performance level between the performance level of the remedial child at baseline and their performance level at endline was calculated as follows:

$$Performance\ level\ gain = endline\ level - baseline\ level$$

Figure 7 summarizes the distribution of remedial children in terms of those whose performance level improved by one or more levels, those whose performance levels did not change, and those whose performance levels went down by one or more levels from baseline to endline.

Figure 7. Change in performance levels from baseline to endline for remedial children

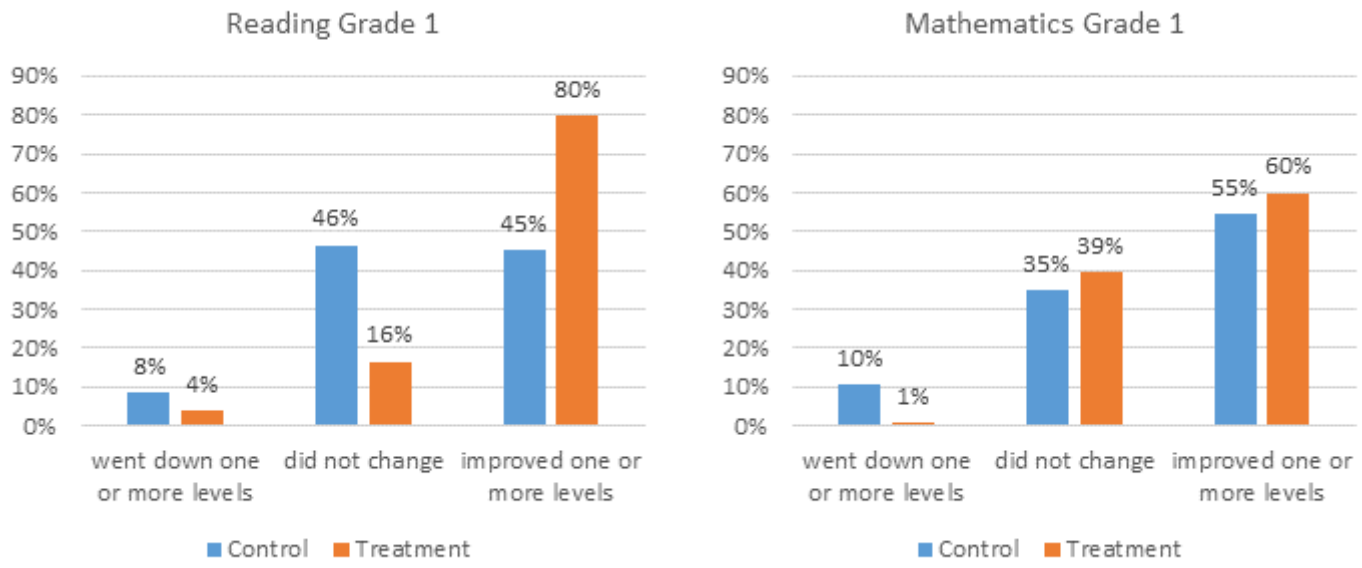


To determine the impact of the remedial pilot research activity, the change in performance levels of the treatment children needs to be compared with the change in performance levels of the control children. The trend of the change in performance levels of the control children should be regarded as the normal impact of a year of schooling on the performance levels of these children. In other words, if there is no remedial activity, then according to the data for the control children, it might be expected that, for reading, the performance level of one half of the children would improve by one or more levels, that more than 10% would go down by one or more levels, and that the performance level of approximately 40% will remain unchanged over the course of a year. For mathematics, the data suggests that some 44% of the remedial children would improve by one or more levels, that nearly 20% would go down by one or more levels, and that the performance level of approximately 40% would remain unchanged over the course of a year.

The difference in the trend between the treatment and control children can be interpreted as the impact of the remedial support that the treatment children received. Both for reading and for mathematics, the data suggests that the remedial children benefited from the remedial support. For reading, 30% more of the children who had been identified as being in need of remedial support improved by one or more performance levels than would have been predicted in the absence of remedial support. For mathematics, the number is 25%. The benefit of the remedial support for mathematics, while very encouraging, may be deflated because of the lack of sensitivity of the fine-grain tool at the lower performance levels (see earlier discussion).

Figures 8, 9, and 10 summarize the change in performance levels for the remedial children by grade. In grade 1 for mathematics, while the difference in the performance of the treatment children and the control children is still in favor of the treatment children, the impact of the remedial support does not seem to be as evident. This is, however, most likely due to the inability of the fine-grain tool to effectively discriminate between performance levels at the lower end of the performance spectrum.

Figure 8. Change in performance levels from baseline to endline for the remedial children in grade 1



With the exception of grade 1 mathematics, the trend across the grades and for both reading and mathematics is clear—the remedial support that the treatment remedial children received have contributed to a greater improvement in performance levels than would be expected if they had not received the remedial support. In grade 3 mathematics, the benefit is an increase of nearly 34% in the proportion of children improving by one or more performance levels over the course of the year—that percentage is almost double the number of children than would be expected if they had not received remedial support.

Figure 9. Change in performance levels from baseline to endline for the remedial children in grade 2

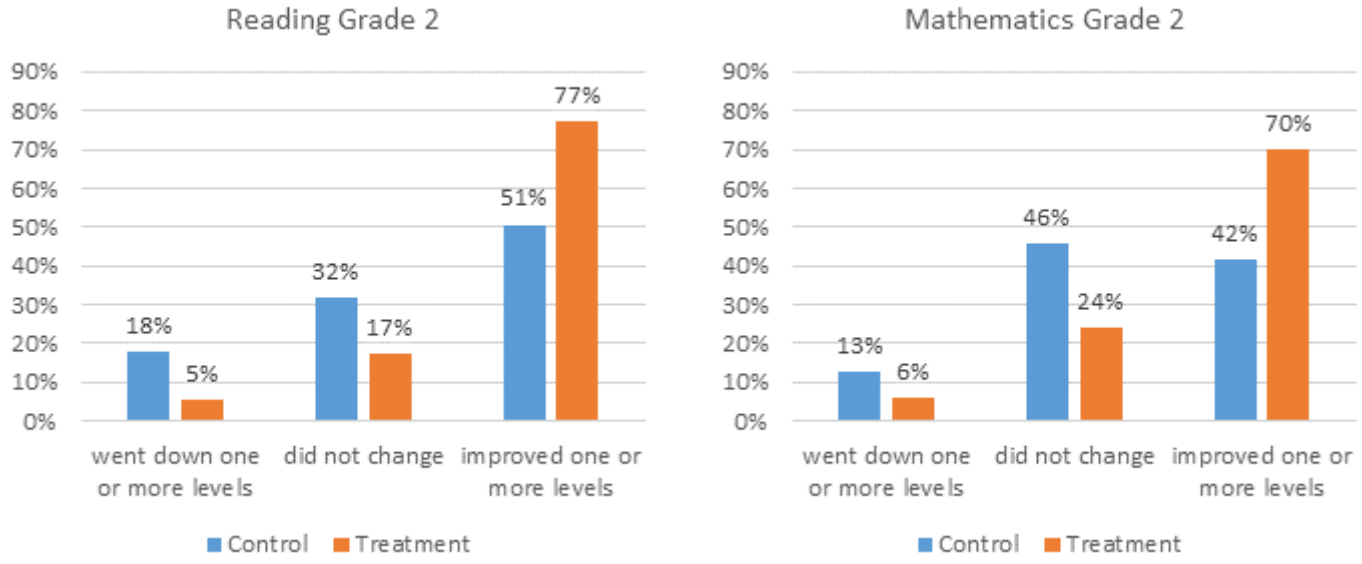
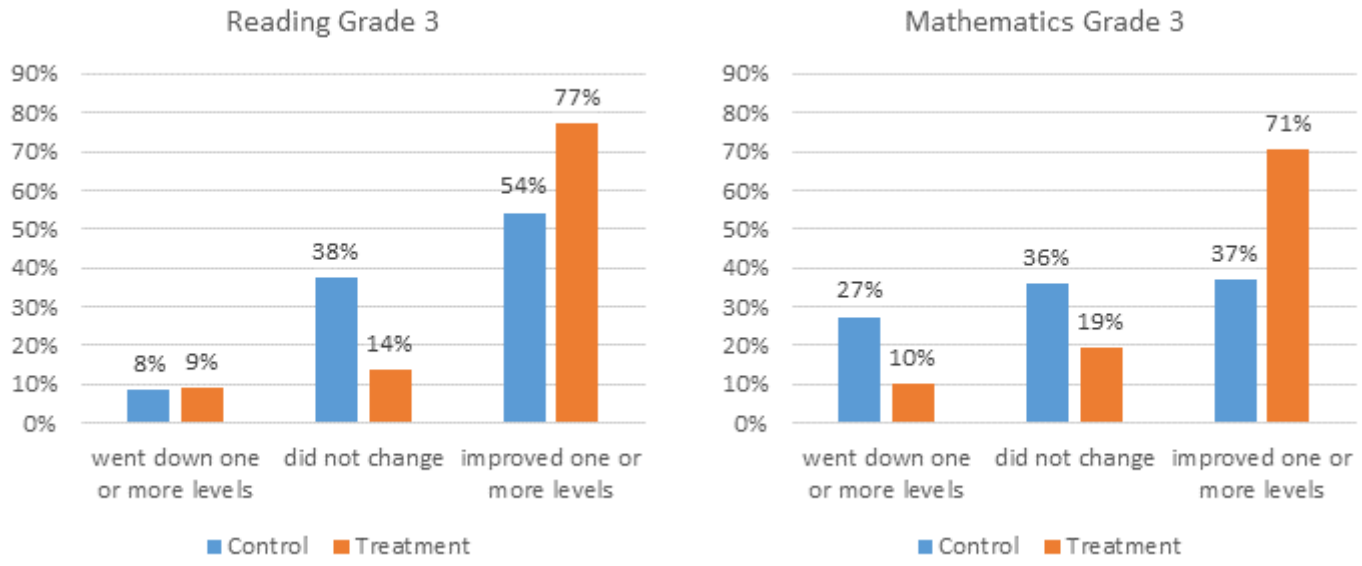


Figure 10. Change in performance levels from baseline to endline for the remedial children in grade 3



In summary, the data indicates quite clearly that the children, who were identified by the coarse-grain tool as performing below the general performance level of the class, benefited from receiving remedial support. For reading, the benefit is reasonably even across the grades: an additional 35% of the grade 1 children, 26% of the grade 2 children, and 23% of the grade 3 children improved their performance level by one or more levels than would have been expected if they had not received remedial support. For mathematics (and ignoring the case of grade 1 children for now), an additional 28% of the grade 2 children and 34% of the grade 3 children improved their performance level by one or more levels than would have been expected if they had not received remedial support.

2.3 Remedial Activity Impact on the Whole Class

In addition to determining whether or not the remedial children benefited from the remedial support that they received, it is also important to know what the impact of those children, who needed and received remedial support, was on the class as a whole. Because children in need of remedial support in any class are performing below the general class performance level, this can have an impact on the class in several ways. In particular, children performing below the general class performance level can slow down the progress of the class as a whole, as a result of needing special attention from their teacher.

2.3.1 Reading

Table 3 summarizes the mean reading scores on the coarse-grain tool at baseline and endline for the control and treatment groups, as well as by grade. In addition, the table also summarizes the difference in the mean reading scores between baseline and endline for the different groups. As with the analysis of the change in performance levels measured by the fine-grain tool and discussed in Section 2.2, the difference in means between baseline and endline for the control group could be interpreted as the natural change associated with an additional year of schooling.

Table 3. Mean reading scores on the coarse-grain tool at baseline and endline and the difference between these

Reading		Baseline			Endline			Difference		
		Remedial	Non-remedial	All	Remedial	Non-remedial	All	Δ Remedial	Δ Non-remedial	Δ All
All	Control	41%	64%	58%	56%	68%	65%	14%	4%	7%
	Treatment	33%	62%	57%	61%	78%	75%	28%	16%	18%
Grade 1	Control	27%	46%	41%	54%	62%	60%	27%	16%	19%
	Treatment	25%	53%	48%	63%	77%	75%	37%	24%	27%
Grade 2	Control	44%	68%	62%	52%	68%	64%	8%	0%	2%
	Treatment	33%	62%	57%	57%	75%	72%	24%	13%	15%
Grade 3	Control	55%	77%	72%	61%	74%	72%	6%	-2%	0%
	Treatment	44%	73%	68%	64%	81%	79%	20%	9%	10%

There are a few striking features in the ***Table 3*** data. The first is with the control group. The mean from baseline to endline for the grade 1 children shows a marked increase and

shows a greater increase for the remedial children than for the non-remedial children. The greater increase for the remedial children may be attributable to the remedial children starting from a lower staring point. However, the same trend is not evident among the children in grades 2 and 3. The grades 2 and 3 children in the control groups demonstrate very little, if any, improvement in mean score from baseline to endline—suggesting that they benefited only very little from the additional year of school, at least in terms of what the coarse-grain tool is able to measure.

The next striking feature of the ***Table 3*** data is apparent in the treatment group. In all cases, the difference in the mean score between the baseline and endline is more pronounced for the remedial children in the treatment group than it is for the children in the control group. This is encouraging because it demonstrates that the remedial children benefited from the remedial support they received. Moreover, equally as encouraging is the performance improvement of the non-remedial children in the treatment schools. The performance improvement of the non-remedial children in the treatment schools is significantly greater than it is for the non-remedial children in the control schools: 24% vs. 16% in grade 1, 13% vs. 0% in grade 2, and 9% vs -2% in grade 3. It is clear that the non-remedial children in the treatment schools also benefited from the remedial pilot research activity. This benefit can, in all likelihood, be attributed to (1) their teachers having been trained on the more effective pedagogies of the remedial pilot research activity and applying these more generally in their teaching, and (2) the improved performance of the remedial children changing the performance profile of the class as a whole.

An additional measure of improvement at the class level comes from an examination of the spread of data across classrooms (measured by standard deviations [SDs]). Both the treatment and the control schools had reductions in standard deviations from baseline to endline. However, the difference for treatment schools was significantly larger. Grade-specific results showed a significant reduction in SDs for all grades for treatment schools. However, they actually showed an increase in spread for control schools in grade 1, with no significant differences in grades 2 and 3. At the school level, results show that there were significant reductions in SDs for only 5 out 17 control schools (29%), while there were significant reductions in SDs for 26 out of 40 treatment schools (65%). Lastly, while there was a significant difference in SDs for treatment and control schools at baseline (with larger SDs in treatment schools), there was no significant difference at endline.

All results provide evidence of a larger reduction in the spread of scores in treatment schools than in control schools. In other words, it seems that remedial support resulted in a larger reduction in the overall variation in scores (i.e., made classes more homogenous).

Figure 11 summarizes the cumulative distribution of reading scores for the treatment and control groups at baseline and endline.

Figure 11. Cumulative distribution of reading scores for treatment and control groups, at baseline and endline

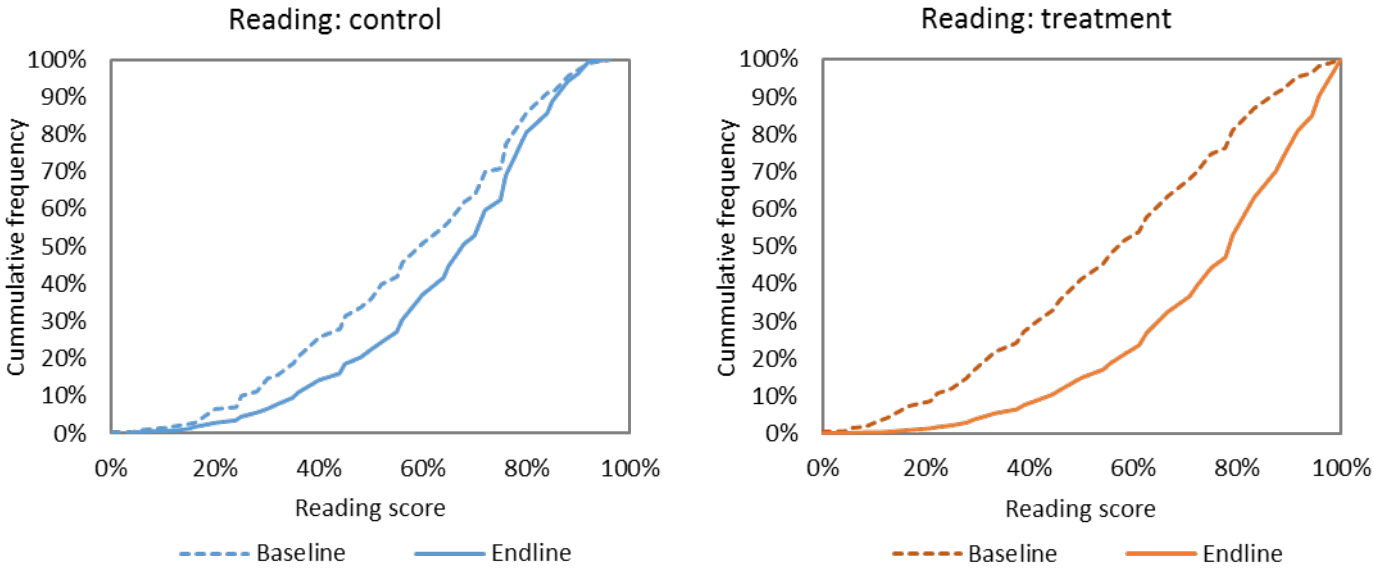


Figure 11 graphs show evidence of improvement in performance from baseline to endline, both for treatment- and for control-school students. In both instances, it is clear that the distributions shifted to the right, meaning that relative reading scores were higher for students at any given percentile. For example, an average student (scoring at the 50th percentile) in treatment schools scored 58% for reading at baseline, but 78% at endline—an increase of 20 percentage points. By comparison, an average student (scoring at the 50th percentile) in control schools scored 60% in reading at baseline and 68% at endline—an increase of 8 percentage points. As a more concrete measure, the Kolmogorov-Smirnov (K-S) test can be used to determine whether or not the baseline and endline distributions are statistically significantly different from one another. While there are significant increases (shifts) in the distribution of scores, both for treatment and for control students, the magnitude of the difference is 2 times larger for treatment schools (D = 0.31 versus D = 0.15).[10]

Figure 12 summarizes the probability density distribution of reading scores for all children in the treatment and control groups, at baseline and endline.

[10] D is calculated as the largest difference in scores for any given percentile in the distribution.

Figure 12. Probability density distribution of reading scores for treatment and control groups, at baseline and endline

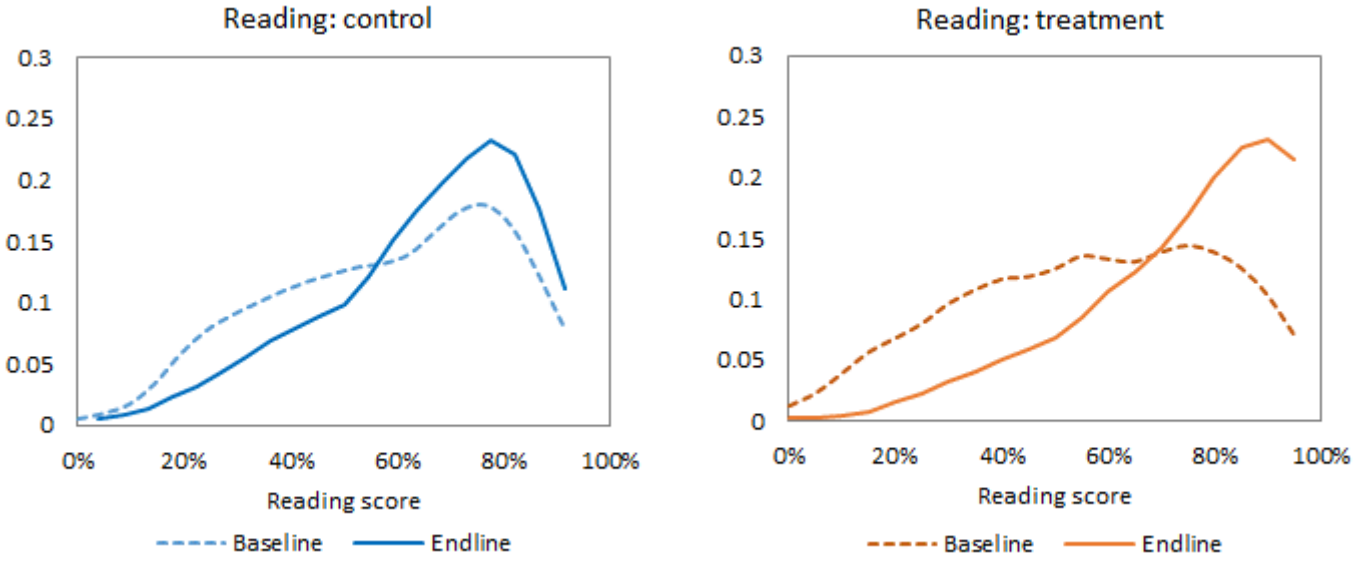


Figure 12 graphs show a greater shift toward higher reading scores for the treatment schools when compared with the control schools. The probability of scoring between approximately 10% and 50% was slightly reduced from baseline to endline for control schools (where the solid line is below the dashed line). Similarly, the likelihood of scoring between 70% and 80% was increased slightly (where the solid line is above the dashed line). In treatment schools, however, there was a larger reduction in the probability of low scores (0% to 55%) and a very large increase in the probability of scoring at the high end (above 80%).

Figure 13 graphs summarize the probability density distribution of reading scores for the non-remedial children in the treatment and control groups, at baseline and endline. In the ***Figure 13*** graphs, it is evident that there was a small shift toward higher reading scores among the non-remedial children in the control schools—the impact of a year of schooling. By contrast, there was a much greater shift toward higher reading scores among the non-remedial children in the treatment schools. This shift is most encouraging, because it demonstrates that even though the non-remedial children in the treatment schools did not receive deliberate attention, they benefited (1) from their teachers having been exposed to more effective pedagogies, and (2) from the remedial children "catching up" to the rest of the class.

Figure 14 graphs summarize the probability density distribution of reading scores for the remedial children in the treatment and control groups, at baseline and endline. In the ***Figure 14*** graphs, it is evident that there was a general shift toward higher reading scores among the remedial children in the control schools—a shift that is greater than the shift for the non-remedial children (compare with ***Figure 13***). This shift reflects what is presented in ***Table 3***, above, where the difference of the means at baseline and endline was greater for the remedial children (an increase of 14%) than it was for the non-remedial children (an increase of 4%). As suggested earlier, the impact of a year of

schooling may be felt more by the remedial children because they start from a lower starting point.

Figure 13. Probability density distribution of reading scores for non-remedial children in the treatment and control groups, at baseline and endline

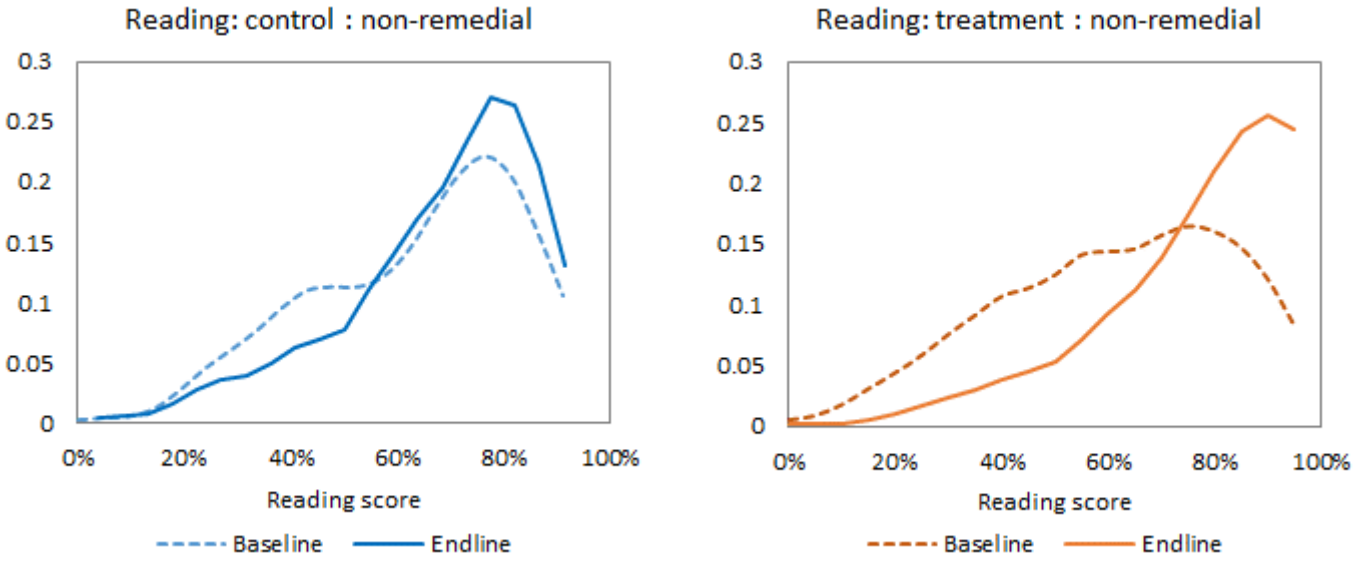
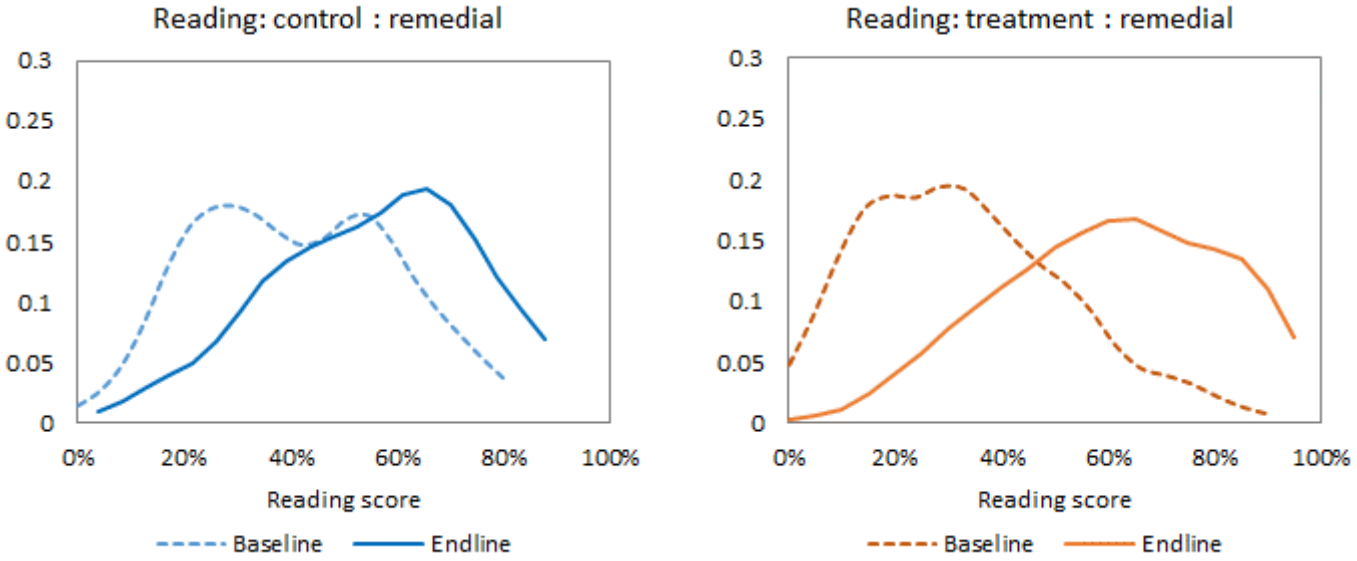


Figure 14. Probability density distribution of reading scores for remedial children in the treatment and control groups, at baseline and endline



What is striking about the treatment graph in ***Figure 14*** is that, in contrast to the other graphs where we see a shift, ***Figure 14*** illustrates a fundamental reshaping of the graph, with a dramatic decrease in the number of children scoring less than 50% on assessment and an even more dramatic increase in the number of children scoring more than 55%. This is clear evidence that the children receiving remedial support

benefited from it, and that they benefited much more than they would have from simply another year of schooling.

2.3.2 Mathematics

This section (2.3.2) presents results for mathematics similarly to how Section 2.3.1 presented results for reading. Because the trends for mathematics and reading are decidedly similar, the sections are also similarly structured. Rather than reducing the text to only the key observations, a full commentary is also provided in this section to enable the section to stand alone.

Table 4 summarizes the mean mathematics scores on the coarse-grain tool at baseline and endline for the control and treatment groups, as well as by grade. In addition, the table also summarizes the difference in the mean mathematics scores between baseline and endline for the different groups. As with the analysis of the change in performance levels measured by the fine-grain tool and discussed in Section 2.2, the difference in means between baseline and endline for the control group could be interpreted as the natural change associated with an additional year of schooling.

Table 4. Mean mathematics scores on the coarse-grain tool at baseline and endline and the difference between these

Mathematics		Baseline			Endline			Difference		
		Remedial	Non-remedial	All	Remedial	Non-remedial	All	Δ Remedial	Δ Non-remedial	Δ All
All	Control	41%	64%	58%	57%	70%	67%	16%	7%	9%
	Treatment	34%	59%	55%	61%	76%	73%	27%	16%	18%
Grade 1	Control	48%	67%	62%	71%	83%	80%	24%	16%	18%
	Treatment	40%	67%	63%	74%	85%	83%	34%	17%	20%
Grade 2	Control	33%	55%	50%	48%	60%	57%	15%	5%	7%
	Treatment	28%	48%	44%	51%	67%	64%	23%	19%	20%
Grade 3	Control	45%	70%	64%	53%	69%	65%	8%	-1%	1%
	Treatment	35%	64%	59%	58%	75%	72%	23%	10%	13%

There are a few striking features in the ***Table 4*** data. The first is with the control group. The mean from baseline to endline for the grade 1 children shows a marked increase and shows a greater increase for the remedial children than for the non-remedial children. The greater increase for the remedial children may be attributable to the remedial

children starting from a lower starting point. However, the same trend is not as evident among the children in grade 2 and certainly not among those in grade 3. The grade 3 children in the control groups demonstrate very little, if any, improvement in mean score from baseline to endline—suggesting that they had not benefited from the additional year of school, at least not in terms of what the coarse-grain tool is able to measure.

The next striking feature of the ***Table 4*** data is apparent in the treatment group. In all cases, the difference in the mean score between the baseline and endline is more pronounced for the remedial children in the treatment group than it is for the children in the control group. This is encouraging because it demonstrates that the remedial children benefited from the remedial support they received. Moreover, equally as encouraging is the performance improvement of the non-remedial children in the treatment schools. For the grade 2 and grade 3 children, the performance improvement of the non-remedial children in the treatment schools is significantly greater than it is for the non-remedial children in the control schools: 19% vs. 5% in grade 2 and 10% vs -1% in grade 3. It is clear that the non-remedial children in the treatment schools also benefited from the remedial pilot research activity. This benefit can, in all likelihood, be attributed to (1) their teachers having been trained on the more effective pedagogies of the remedial pilot research activity and applying these more generally in their teaching, and (2) the improved performance of the remedial children changing the performance profile of the class as a whole.

An additional measure of improvement at the class level comes from an examination of the spread of data across classrooms (measured by standard deviations [SDs]). Both the treatment and the control schools had reductions in SDs from baseline to endline. While treatment schools had significant reductions in SDs from baseline to endline, control schools actually had an overall increase in the spread of their scores across grades and schools. Although grade-specific results showed large reductions in SDs in grades 1 and 3 for treatment schools, there was an increase in SDs for grade 2. Control schools had a small reduction in spread in grade 1, with no significant differences in grades 2 and 3. School-specific results show that there were no significant reductions in SDs for control schools and reductions in only 12 out of 28 treatment schools (43%). Similar to what was found for reading, there was a significant difference in SDs for treatment and control schools at baseline (with larger SDs in treatment), but no significant difference at endline

All results provide evidence of a larger reduction in the spread of scores in treatment schools than in control schools. In other words, it seems that remedial support resulted in a larger reduction in the overall variation in scores (i.e., made classes more homogenous).

Figure 15 summarizes the cumulative distribution of mathematics scores for the treatment and control groups at baseline and endline.

Figure 15. Cumulative distribution of mathematics scores for treatment and control groups, at baseline and endline

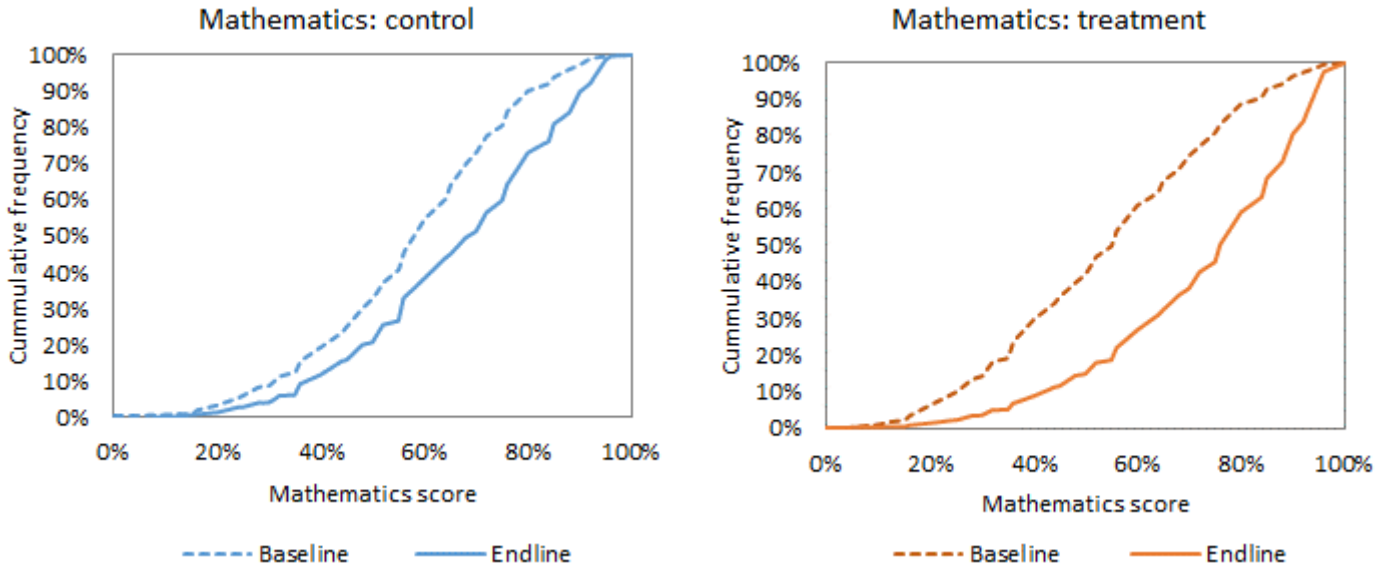


Figure 15 graphs show evidence of improvement in performance from baseline to endline, both for treatment- and for control-school students. In both instances, it is clear that the distributions shifted to the right, meaning that relative mathematics scores were higher for students at any given percentile. For example, an average student (scoring at the 50th percentile) in treatment schools scored 55% for mathematics at baseline, but 76% at endline—an increase of 21 percentage points. By comparison, an average student (scoring at the 50th percentile) in control schools scored 58% in mathematics at baseline and 68% at endline—an increase of 10 percentage points. As a more concrete measure, the Kolmogorov-Smirnov (K-S) test can be used to determine whether or not the baseline and endline distributions are statistically significantly different from one another. While there are significant increases (shifts) in the distribution of scores, both for treatment and for control students, the magnitude of the difference is 1.6 times larger for treatment schools (D = 0.36 versus D = 0.22).[11]

Figure 16 summarizes the probability density distribution of mathematics scores for all children in the treatment and control groups, at baseline and endline.

[11] D is calculated as the largest difference in scores for any given percentile in the distribution.

Figure 16. Probability density distribution of mathematics scores for treatment and control groups, at baseline and endline

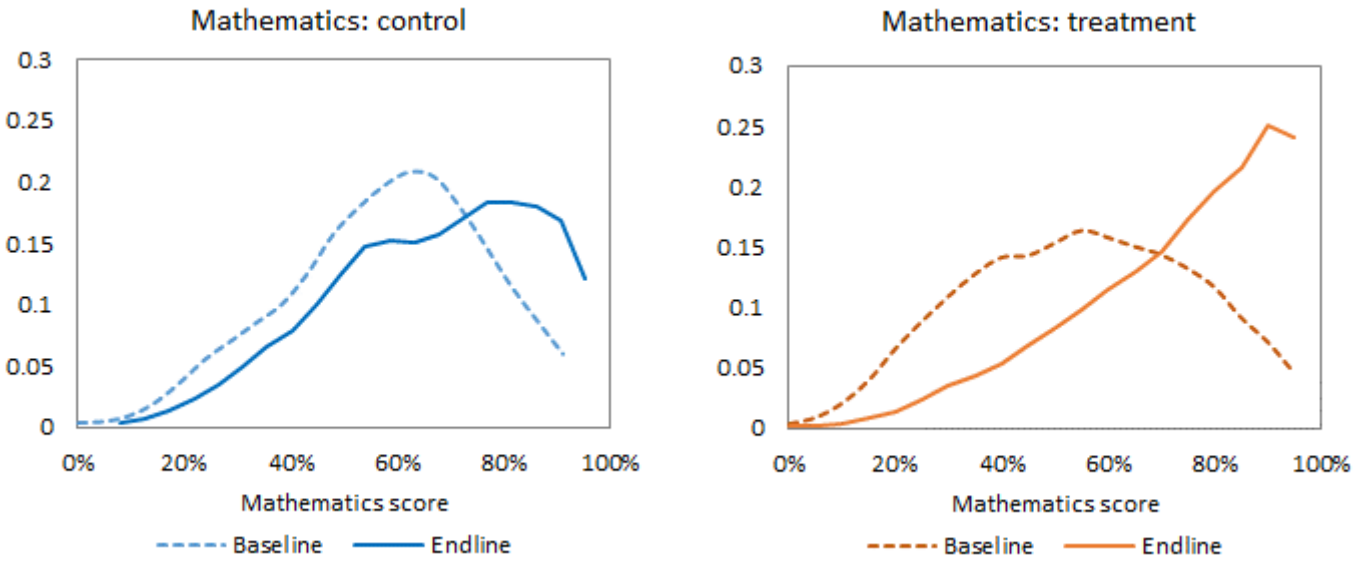


Figure 16 graphs show a greater shift toward higher mathematics scores for the treatment schools when compared with the control schools. The probability of scoring between approximately 10% and 70% was slightly reduced from baseline to endline for control schools (where the solid line is below the dashed line). Similarly, the likelihood of scoring between more than 80% was increased slightly (where the solid line is above the dashed line). In treatment schools, however, there was a larger reduction in the probability of low scores (0% to 60%) and a very large increase in the probability of scoring at the high end (above 75%).

Figure 17 graphs summarize the probability density distribution of mathematics scores for the non-remedial children in the treatment and control groups, at baseline and endline. In ***Figure 17*** graphs, it is evident that there was a small shift toward higher mathematics scores among the non-remedial children in the control schools—the impact of a year of schooling. By contrast, there was a much greater shift toward higher mathematics scores among the non-remedial children in the treatment schools. This shift is most encouraging, because it demonstrates that even though the non-remedial children in the treatment schools did not receive deliberate attention, they benefited (1) from their teachers having been exposed to more effective pedagogies, and (2) from the remedial children "catching up" to the rest of the class.

Figure 18 graphs summarize the probability density distribution of mathematics scores for the remedial children in the treatment and control groups, at baseline and endline. In ***Figure 18*** graphs, it is evident that there was a general shift toward higher mathematics scores among the remedial children in the control schools—a shift that is greater than the shift for the non-remedial children. This shift reflects what is presented in ***Table 4***, above, where the difference of the means at baseline and endline was greater for the remedial children (an increase of 16%) than it was for the non-remedial children (an increase of 7%). As suggested earlier, the impact of a year of schooling may be felt more by the remedial children because they start from a lower starting point.

Figure 17. Probability density distribution of mathematics scores for non-remedial children in the treatment and control groups, at baseline and endline

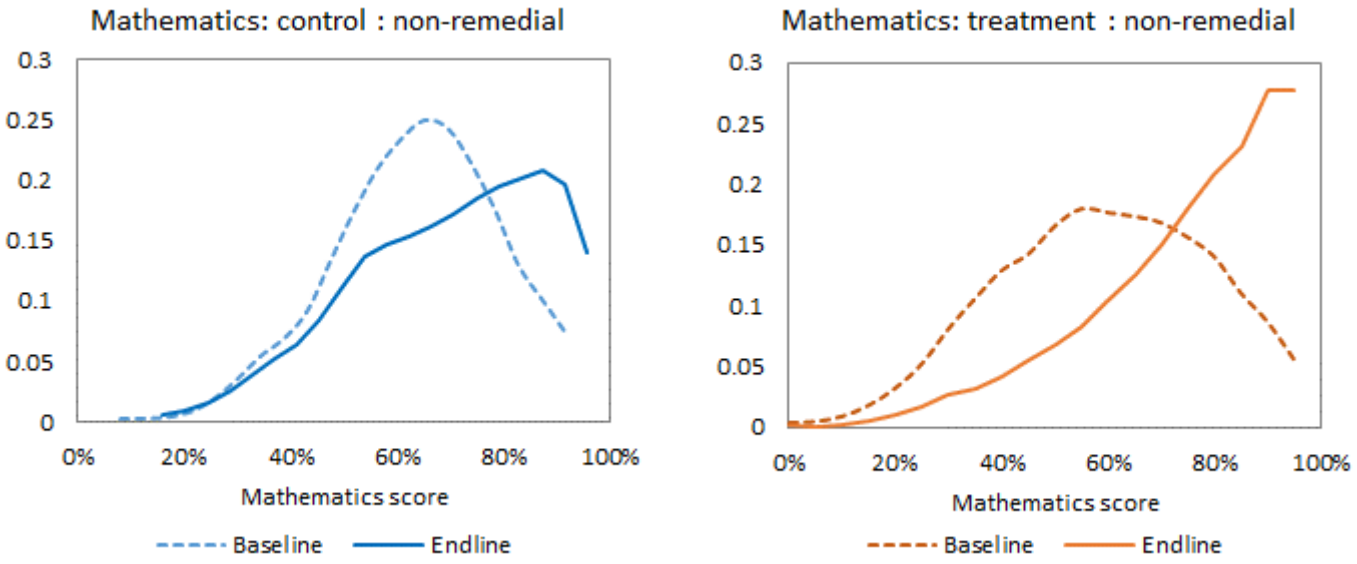
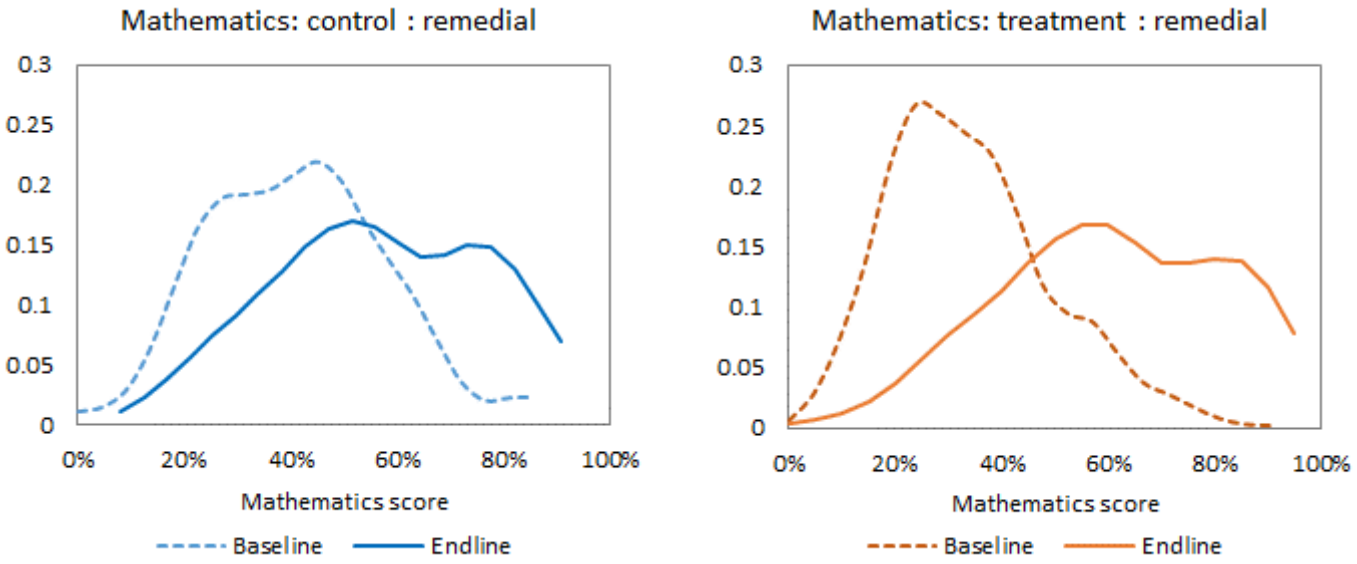


Figure 18. Probability density distribution of mathematics scores for remedial children in the treatment and control groups, at baseline and endline



What is striking about the treatment graph in ***Figure 18*** is that, in contrast to the other graphs where we see a shift, ***Figure 18*** illustrates a fundamental reshaping of the graph, with a dramatic decrease in the number of children scoring less than 45% on assessment and an even more dramatic increase in the number of children scoring more than 60%. This is clear evidence that the children receiving remedial support benefited from it, and that they benefited much more than they would have from simply another year of schooling.

2.4 Remedial Activity Impact on the Different School Types

The sample for the remedial pilot research activity was deliberately selected to take account of the influx of Syrian refugee children into Jordanian schools in recent years. As mentioned earlier, one hope for the fine-grain tool is that it can be used by schools to determine the grade level equivalent performance of Syrian (and other) children, who are without reliable school records when they try to enroll at a school.

As described in Section 1.4, the sample of treatment schools included four different schools types: (1) ordinary public schools (or regular schools)—schools with few or no Syrian refugee children; (2) ordinary public schools with a significant number of Syrian children in the mainstream (mainstream schools); (3) double shift (morning shift) schools—schools with no Syrian refugee children, but reduced teaching hours due to the double shifting; and (4) double shift (afternoon shift) schools—schools for Syrian refugee children, and with reduced teaching hours due to the double shifting.

Table 5 compares the reading performance at baseline and endline for the non-remedial and remedial children in each of the four different school types.

Table 5. Mean reading scores on the coarse-grain tool, at baseline and endline for treatment schools and by school type

Reading	Baseline			Endline			Difference		
	Remedial	Non-remedial	All	Remedial	Non-remedial	All	Δ Remedial	Δ Non-remedial	Δ All
Ordinary public schools	35%	64%	58%	64%	80%	77%	30%	16%	19%
Ordinary public schools with Syrian refugee children in the mainstream	33%	60%	55%	59%	76%	73%	26%	15%	17%
Double-Shift (Morning) – Jordanian	38%	67%	62%	60%	78%	74%	22%	11%	13%
Double-Shift (Afternoon) – Syrian	27%	52%	47%	55%	70%	67%	29%	18%	20%

Table 5 shows that while the gains in scores from baseline to endline were similar for ordinary public schools, ordinary public schools with Syrian refugee children in the mainstream, and for double-shift afternoon schools (Syrian refugee children) it was the double-shift morning schools (Jordanian children) that saw smaller gains across all three categories (remedial, non-remedial, and overall).

Table 6 compares the mathematics performance at baseline and endline for the non-remedial and remedial children in each of the four different school types.

Table 6. Mean mathematics scores on the coarse-grain tool, at baseline and endline for treatment schools and by school type

Mathematics	Baseline			Endline			Difference		
	Remedial	Non-remedial	All	Remedial	Non-remedial	All	Δ Remedial	Δ Non-remedial	Δ All
Ordinary public schools	36%	62%	57%	62%	79%	75%	26%	17%	18%
Ordinary public schools with Syrian refugee children in the mainstream	33%	58%	53%	59%	73%	71%	26%	15%	18%
Double-Shift (Morning) – Jordanian	37%	63%	68%	63%	76%	73%	26%	13%	15%
Double-Shift (Afternoon) – Syrian	34%	56%	52%	62%	75%	73%	28%	19%	21%

Table 6 shows that the gains in scores from baseline to endline were strikingly similar for ordinary public schools, ordinary public schools with Syrian refugee children in the mean stream, and for double-shift morning schools (Jordanian children). Double-shift afternoon schools (Syrian refugee children) saw the highest gains across each of the three categories (remedial, non-remedial, and overall), but the relative gains over the other schools were small.

There is some evidence of a difference in performance for the different school types. In particular for reading, the double-shift morning schools (Jordanian children) saw smaller gains across all three categories (remedial, non-remedial, and overall) than the other schools did, and for mathematics, the double-shift afternoon schools (Syrian refugee children) saw the highest gains across each of the three categories (remedial, non-remedial, and overall), even if the relative gains over the other schools were small. That said, the data from this study is not powerful enough to make claims about the impact or not of Syrian refugee children on the performance of children in the different schools, or for that matter about whether or not the different schools perform differently.

2.5 Remedial Activity Impact, by Gender

Because gender equity in education is an important topic, particularly so in Jordan, it is useful to examine this intervention's impact on male and female students. Furthermore, the Intervention Impact Report (Brombacher et al., March 2015)[12] notes that the "intervention was significantly more successful for female students." The report showed that female students tended to benefit significantly more from the intervention than male students did. In addition, the report's authors noted that "it is not possible from these data to determine why this was the case" and that the "gender

[12] Brombacher, A., J. Stern, L. Nordstrum, C. Cummiskey, and A. Mulcahy-Dunn. March 2015. *Intervention Impact Analysis Report.* EdData II Task Order 16: National Early Grade Literacy and Numeracy Survey—Jordan. Prepared by RTI International for USAID.

difference is an issue that is worth exploring further in future studies." Although the remedial pilot research activity was not focused on gender, it is nonetheless interesting to examine whether or not any evidence exists that the remedial support impacted students differently by gender.

Table 7 compares the reading and mathematics performance at baseline and endline for the remedial children, by gender. The ***Figure 19*** and ***Figure 20*** graphs summarize the probability density distribution of the reading and mathematics scores, by gender, for the remedial children in the treatment groups, at baseline and endline. Although there are some differences in the actual values and in the shapes of the respective graphs, in general, it seems there is no strong evidence of a difference in the impact of the remedial pilot by gender. This is most encouraging. The implications of these data will be discussed in Section 3 of this report.

Table 7. Mean scores on the coarse-grain tool, at baseline and endline for remedial children, by gender

		Baseline	Endline	Difference
Reading	**Female**	35.3%	61.8%	26.6%
	Male	30.3%	59.3%	29.1%
Mathematics	**Female**	34.9%	61.6%	26.8%
	Male	32.7%	59.3%	26.6%

Figure 19. Probability density distribution of coarse-grain readings scores for remedial children, by gender and at baseline and endline

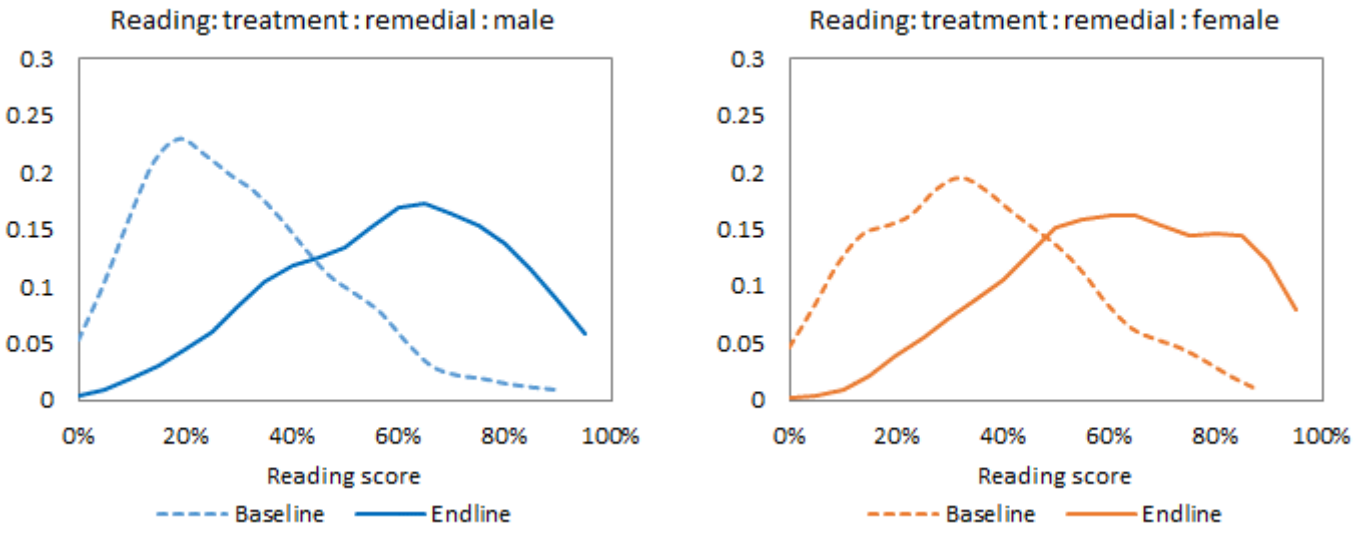


Table 8 compares percentage of attendance and percentage of course completion by gender. Both for reading and mathematics, it is clear that no significant difference exists, by gender, for either the percentage of attendance of the remedial support sessions or the percentage of course completion.

Figure 20. Probability density distribution of coarse-grain mathematics scores for remedial children, by gender and at baseline and endline

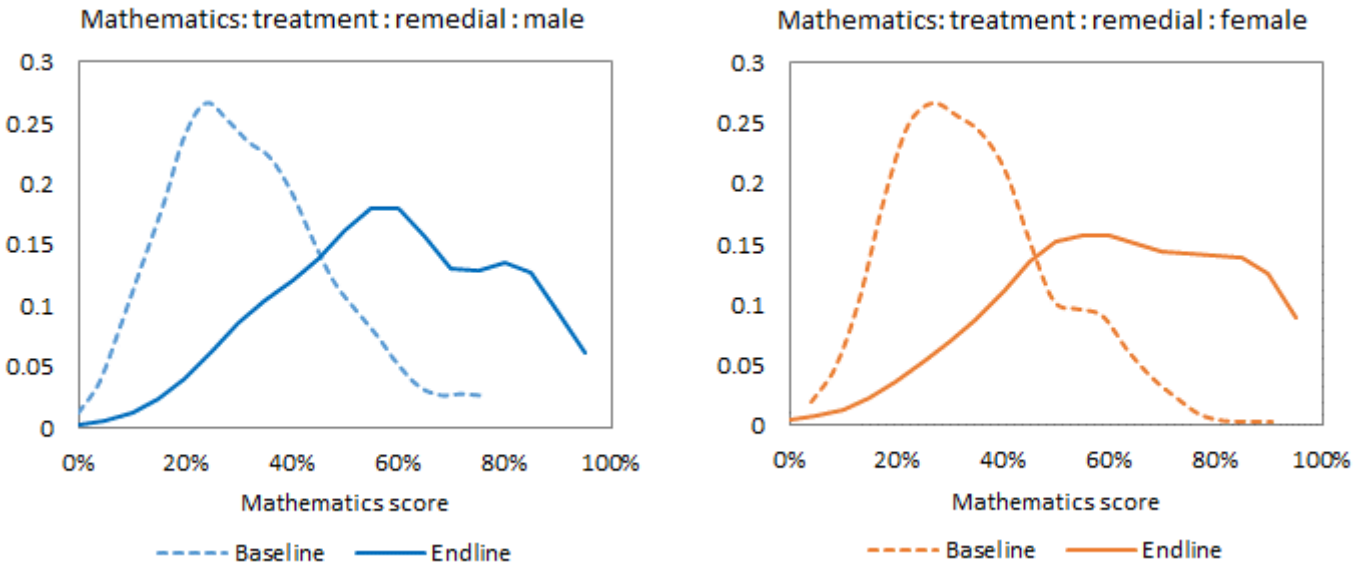


Table 8. Remedial session attendance and course completion data for remedial children, by gender

		% attendance of remedial support sessions	% of children with baseline and endline scores
Reading	**Female**	85.5%	78.6%
	Male	85.1%	77.1%
Mathematics	**Female**	85.6%	82.2%
	Male	84.6%	76.4%

2.6 Remedial Activity Impact, by Nationality

The remedial pilot research activity did not intend to provide support according to the nationality of the participating children. However, given the reality of the Syrian refugee situation in Jordan and its impact on schooling in general, the hope in designing the coarse-grain tool was that it could play the role of a "placement" tool to be used in general and, more specifically, to determine the grade equivalent performance level of Syrian children enrolling in schools in Jordan. For this reason, the schools in the sample were carefully selected to represent the various school realities in Jordan at the time of the study. In addition, the nationalities of the remedial students in the treatment schools were recorded. Recording students' nationalities allows for the data to be disaggregated by the nationality of the participating children.

Table 9 compares the reading and mathematics performance at baseline and endline for the remedial children, by nationality (non-Syrian and Syrian). The ***Figure 21*** and ***Figure***

22 graphs summarize the probability density distribution of the reading and mathematics scores, respectively, by the nationality of the remedial children in the treatment groups, at baseline and endline. Although some differences in the actual values and in the shapes of the respective graphs exist, there is no strong evidence of a general difference in the impact of the remedial pilot by the children's nationality.

Table 9. Mean scores on the coarse-grain tool, at baseline and endline, for remedial children, by nationality

		Baseline	Endline	Difference
Reading	**Non-Syrian**	35.4%	62.1%	26.7%
	Syrian	28.5%	57.5%	29.1%
Mathematics	**Non-Syrian**	34.2%	59.9%	25.8%
	Syrian	33.3%	62.0%	28.6%

Figure 21. Probability density distribution of coarse-grain readings scores for remedial children, by nationality and at baseline and endline

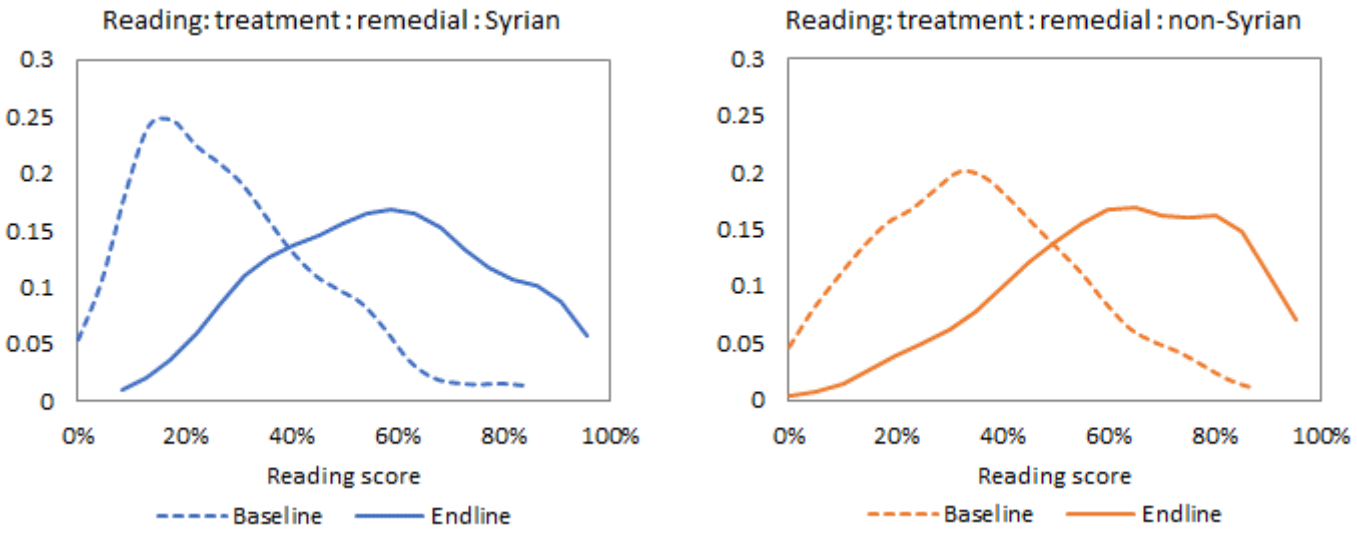


Table 10 compares percentage of attendance and percentage of course completion by the children's nationalities. Both for reading and mathematics, it is clear that no significant difference exists, by nationality, in either the percentage of attendance of the remedial support sessions or the percentage of course completion.

Figure 22. Probability density distribution of coarse-grain mathematics scores for remedial children, by nationality and at baseline and endline

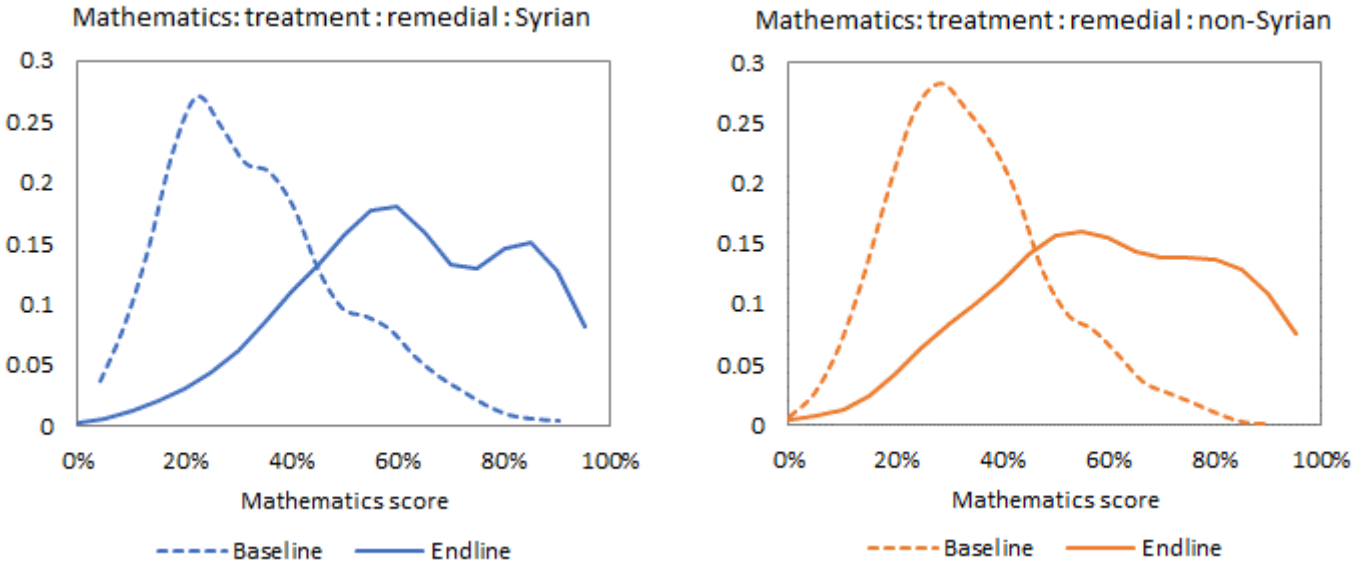


Table 10. Remedial session attendance and course completion data for remedial children, by gender

		% attendance of remedial support sessions	% of children with baseline and endline scores
Reading	**Non-Syrian**	86.3%	81.7%
	Syrian	84.2%	78.0%
Mathematics	**Non-Syrian**	85.0%	83.7%
	Syrian	84.8%	80.7%

3 Lessons Learned

The aim of the remedial pilot research activity was to develop resources to assist teachers to: (1) objectively identify those children performing below the general performance level of the class; (2) describe the performance level of those children who are performing below the general performance level of the class, in terms of the expectations of the syllabus; and (3) provide remedial support to the children performing below the general performance level of the class, by using appropriately targeted materials. In addition to developing these resources, the remedial pilot research activity researched the effectiveness of the materials in achieving their purpose. The previous section has shown quite clearly that the resources accomplished what they were designed to do and that the research activity was a success in that regard. Nevertheless, there are lessons to be learned, some of which are discussed in this section.

3.1 Diagnostic Tools

With the exception of the fine-grain mathematics tool that needs to be refined to be able to better differentiate between children performing at the KG and at the 1.1 levels, all developed tools were effective in terms of their purpose. The coarse-grain tools were reliably able to identify the children performing below the general performance level of the class. In the pre-pilot study that was used to refine the instruments, teachers of the tested classes were asked to rate the children in their classes according to whether they believed the children to be performing below, performing at, or performing above the level of the class. These predictions were compared with the results of the coarse-grain tool, and a reasonable correlation was found between the teacher's prediction and the coarse-grain assessment results. It goes without saying that the correlation was not perfect, and this is, in part, because teachers cannot always have an objective opinion of the performance level of all the children in their class. The correlation was, however, strong enough to be acceptable.

The study also found that the fine-grain tools were, in general, able to differentiate between the children and to determine their grade equivalent performance levels. In the pre-pilot study that was used to refine the instruments, the fine-grain tool was not administered to the lowest performing students in each class, but rather to a deliberately selected sample of the children in a class. A sample of 10 children per class was selected by ranking the children in the class according to their score on the coarse-grain tool from highest to lowest, dividing the number of children in the class by 10, to determine k (the skip interval), and then selecting every k^{th} child from the list. The fine-grain tool was administered to the 10 sampled children in each class and their grade equivalent performance level (as determined by the fine-grain tool), compared with their rank in the class as determined by the coarse-grain tool. The results of this comparison confirmed the effectiveness of the instrument, because the grade equivalent performance levels of the sampled children compared well with their ranking on the coarse-grain tool. The grade equivalent performance level of the children who performed the least well on the coarse-grain tool was, in general, below

that of the class level; the grade equivalent performance level of the children who performed the best on the coarse-grain tool was, in general, above that of the class level.

As mentioned earlier, the fine-grain mathematics tool does, however, need some refinement to enable it to differentiate more effectively between performance at the KG and 1.1 levels.

Observers of the remedial pilot research activity have questioned whether or not the fine-grain tool might be too complex for teachers to administer. The study suggests that it is not. In their reports about the teachers' implementation of the fine-grain tool, the project coaches reported that teachers implemented the fine-grain tool with a high level of fidelity. Nevertheless, as part of the remedial pilot research activity, an iPad version of the fine-grain tool was developed with the project's Yemen-based partner, Prodigy. The iPad version of the tool made administration easier for the teachers because the decision rules were programmed into the iPad application, hence reducing human error in the interpretation of results.

3.2 Remedial Activities

The remedial pilot research activity developed seven sets of remedial materials for reading and seven sets of remedial materials for mathematics—one set of materials for each of the seven different grade-equivalent performance levels. Each set of materials consisted of approximately 20 to 24 15-minute mini-lessons. Twenty mini-lessons were developed with the expectation that a teacher would typically meet with the remedial children (in each subject) twice per week, and thus 20 to 24 mini-lessons were thought to be enough for one semester (typically about 12 to 16 weeks). It was also expected that a teacher would retest each child using the fine-grain tool at the end of the 20 to 24 mini-lessons or at the end of the semester—whichever occurred sooner.

The contents of the mini-lessons were derived from the foundational materials that had already been developed for the remedial pilot research activity. As such, the materials focused on developing children's foundational skills for reading and mathematics using research-based pedagogies.

On reflection, the remedial materials achieved their purpose. The survey results show quite clearly that the remedial children benefited from the support they received, and thus the results suggest that attention to foundational reading and mathematics skills can help children catch up to their appropriate grade equivalent performance level if they are behind in the grade equivalent performance level of their class. In addition, the results also show that non-remedial children in treatment classes, where teachers were implementing the remedial support activities, benefited more than the non-remedial children in control classes, where teachers did not implement such activities. This may be attributed to teachers, who implement the remedial support activities, having received exposure to more research-based pedagogies through the training that they received, and thus enabling them to implement these pedagogies more generally in their classes. Certainly anecdotal evidence gleaned from feedback sessions with teachers is very clear

on this count: teachers who were trained to implement the remedial activities in their classes recognized the value of the pedagogical approach and found ways of implementing these approaches more generally.

Of concern in the data from the study is that, in general, the mean score on the coarse-grain tool for children in grades 2 and 3 in the control schools did not change significantly. Although it is possible to speculate on the reasons for this observation, the fact remains that the grade 2 and grade 3 children in the control schools did not, on average, benefit from the additional year of schooling that the period of the research represents.

The research suggests that (1) it is possible to develop materials that teachers can use to provide effective remedial support to children and, more generally, that (2) teachers who are exposed to more research-based pedagogies for reading and mathematics are associated with children who perform better.

3.3 Implementing Differentiated Support in Class

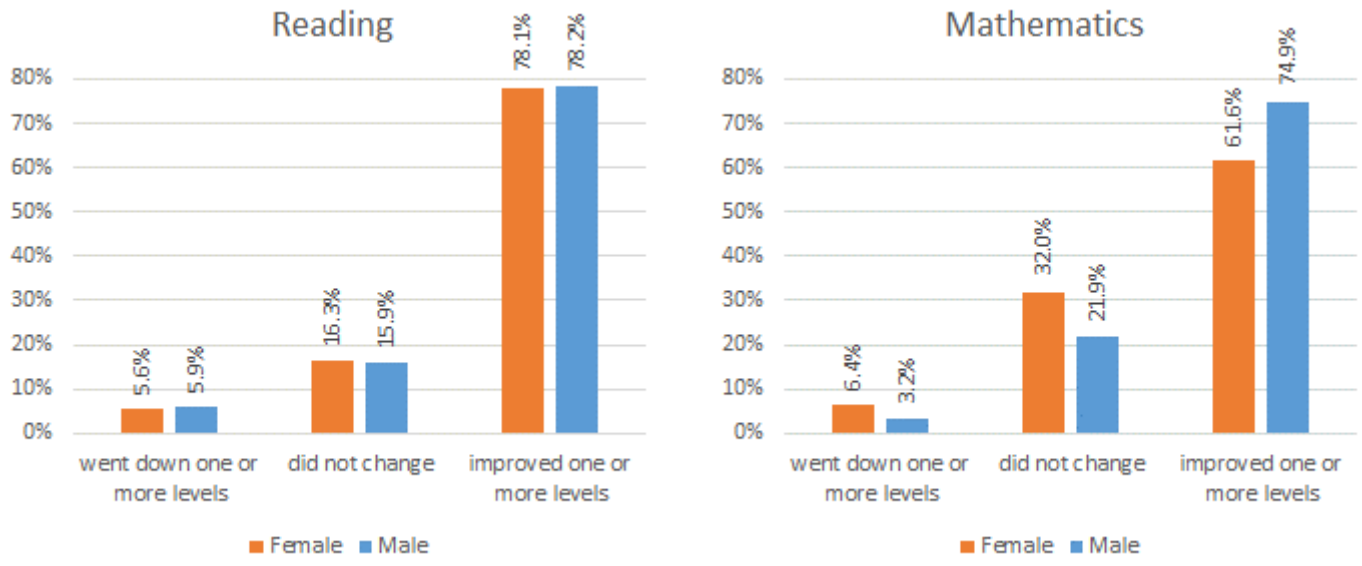
The greatest challenge that teachers experienced during the remedial pilot research activity was in conducting the remedial support sessions (mini-lessons) with those children identified as being in need of remedial support. In their training, teachers were presented with three different possible models for implementing the mini-lessons with the groups of remedial children: (1) in-class implementation, (2) before or after school implementation or during school breaks; or (3) using the teacher in charge of the learning resources room to conduct the mini-lessons. In practice, every teacher chose the in-class implementation model. That is, they conducted the mini-lessons during regular classroom time. The challenge that this presented was not the management of the mini-lessons. Most teachers managed the mini-lessons with relative ease. The challenge was in keeping the other children in the class productively engaged. Teachers did not, in general, have experience in providing differentiated support to children and, in particular, in working with a subset of the class, while providing the rest of the class with work that they could complete independently. Much of the in-class support by the project coaches, as well as the additional training that teachers received at the start of the second semester, was focused on developing effective strategies for engaging the rest of the class in meaningful tasks that supported the lesson outcomes and which allowed the children to work independently. At the same time, much of the coaching and training was devoted to creating classroom cultures (discipline structures) that enabled this differentiated teaching to take place.

In future remedial activities implementations, more attention will need to be devoted from the start to developing the teachers' skills in creating the necessary classroom culture and in creating activities that keep the other children in the class productively engaged.

3.4 Gender

As previously mentioned, the Intervention Impact Report notes that the "intervention was significantly more successful for female students." The report showed that female students tended to benefit significantly more from the intervention than male students did. While gender was never intended to be a focus of the remedial pilot research activity, in light of the findings of the intervention study, it is logical that the data for the remedial pilot research activity were reviewed in terms of the students' gender. While the data shows that the mean score of the male students on the baseline coarse-grain tool was slightly lower than that of the female students for both reading and mathematics (30.3% vs. 35.3% for reading and 32.7% vs. 34.9% for mathematics), the increase in the mean score between baseline and endline was either the same for male students and female students or slightly greater for male students than it was for female students (29.1% vs. 26.6% for reading and 26.6% vs. 26.8% for mathematics). ***Figure 23*** summarizes the distribution of remedial treatment children, by gender, in terms of those whose performance level improved by one or more levels, those whose performance levels did not change, and those whose performance levels went down by one or more levels from baseline to endline. In much the same way that the mean scores on the coarse-grain tool suggest that the male students benefited from the remedial support as least as much as the female students did, so the graphs of ***Figure 23*** also indicate that the male students benefited from the remedial support at least as much as the female students did, and in the case of mathematics, they possibly benefited more so.

Figure 23. Change in performance levels from baseline to endline for remedial treatment children, by gender



The striking difference in the experience of the male students, when compared with the female students, with the intervention and remedial studies is a cause for reflection. How can it be that in the intervention pilot research study the male students did not seem to benefit from the intervention as much as the female students did, yet

in the remedial pilot research study, the male students benefited as least as much as the female students did and maybe more so?

In an attempt to better understand the gender findings of the Intervention Pilot Research Study and, in particular, why male and female students appear to experience their education differently, a small research activity, under the technical leadership of the author of this report, was launched in Jordan in 2015. At the time of the writing of this report, that study was busy with final activities and the findings were not yet available. However, the theme that is emerging from the data of that study is that male and female students appear to need different support and/or management from their teachers. In broad terms, that study is suggesting that when teachers do not pay attention to a particular aspect of the class or school environment, then the male and female students respond differently. In particular, in that study it has been noted that: when teachers do not pay attention to how the children wear their uniforms, the female students generally continue to wear their uniform more neatly than the male students; when teachers do not monitor homework, the female students generally continue to do homework more diligently than the male students; and when teachers do not monitor the absence of the children in their class, the male students tend to be more absent than the female students. In summary, it appears from that study as if male students need more supervision and structuring than female students.

A significant difference between the Intervention pilot research activity and the remedial pilot research activity is in the way that teachers work with the students in their class. In the Intervention pilot research activity, teachers worked with the whole class and did not pay particular attention to the individual children—at least not as a result of how the activities were designed. By contrast, in the remedial pilot research activity, teachers worked on an almost individual basis with each of the children in the remedial support groups. In the remedial support activities, the male students could not "hide"—they received direct and personal attention from their teachers.

The difference in the nature of teacher interaction with the students in a class for the intervention and for the remedial pilot research activities, as well as the emerging themes from the gender study being conducted in parallel, provides a hint at both why male and female students experience their education differently and how, by providing structure and support, teachers may be able to better support male students in benefiting more from their educational opportunities.

3.5 Nationality

The remedial pilot research activity data does not provide any evidence of a significant difference in the experience of the children in the study for either school type (ordinary public schools with few or no Syrian refugee children; ordinary public schools with a significant number of Syrian children in the mainstream; double shift [morning shift] schools—schools with no Syrian refugee children; and double shift [afternoon shift] schools—schools for Syrian refugee children) or nationality (non-Syrian or Syrian). Although this is encouraging as it suggests that children, irrespective of school type and nationality, can benefit from remedial activities, caution needs to be exercised in

interpreting this finding—there are more factors involved than this study can account for, e.g., the experience of the teachers varies across the different school types, and so forth.

3.6 Use of Project Coaches

In designing the remedial pilot research activity, a conscious decision was made to employ external project coaches to conduct the teacher training and provide the in-class support. The reason was quite simply an awareness that the nature of the activity—providing differentiated support to the children in a class—was such a dramatic departure from teachers' typical practice and that they would need intensive and ongoing support to implement the program with fidelity. In the Intervention pilot research activity, where MoE Supervisors were used to provide the training and in-class coaching, it was found that fewer than 8% of the teachers received the requisite number of visits (12 to 16 visits in the year); 16% of the teachers received between one half and three quarters of the expected visits; 28% of the teachers received between one quarter and one half of the number of expected visits; and 48% of teachers (nearly one half of the participating teachers) received less than one quarter (25%) of the number of visits expected in terms of the activity design. The reason for this is quite simply that MoE supervisors are very busy people, and they have a wide range of responsibilities that get in the way of being able to visit teachers as frequently as the activity may require. The benefit of using external project coaches is evident in that more than 90% of the teachers in the remedial pilot research activity were visited as often as was required. To maximize the impact of a project, the benefits of using external project coaches should be considered.

4 Conclusion and Recommendations

It is clear from this report that the remedial pilot research activity was successful in achieving the objectives. Namely, the remedial pilot research activity was successful in developing resources to assist teachers to: (1) objectively identify those children performing below the general performance level of the class; (2) describe the performance level of those children who are performing below the general performance level of the class, in terms of the expectations of the syllabus; and (3) provide remedial support to the children performing below the general performance level of the class, by using appropriately targeted materials.

The impact of the research activity on those children, who were identified to be in need of remedial support, was determined by considering the difference in the trend between the children in the treatment and in the control schools. Both for reading and for mathematics, the data suggests that the remedial children benefited from the remedial support. For reading, 30% more of the children, who had been identified as being in need of remedial support, improved by one or more performance levels than would have been predicted in the absence of remedial support. For mathematics, the number is 25% more children.

The data indicates quite clearly that the children, who were identified as performing below the general performance level of the class, benefited from receiving remedial support. For reading, the benefit is reasonably even across the grades: an additional 35% of the grade 1 children, 26% of the grade 2 children, and 23% of the grade 3 children improved their performance level by one or more levels than would have been expected if they had not received remedial support. For mathematics, an additional 28% of the grade 2 children and 44% of the grade 3 children improved their performance level by one or more levels than would have been expected if they had not received remedial support.

In addition to determining whether or not the remedial children benefited from the remedial support that they received, it is also important to know what the impact of those children, who needed and received remedial support, was on the class as a whole. As much as the data demonstrates that the remedial children benefited from the remedial support they received, as encouraging is the performance improvement of the non-remedial children in the treatment schools, which is significantly greater than it is for the non-remedial children in the control schools: 24% vs. 16% in grade 1, 13% vs. 0% in grade 2, and 9% vs -2% in grade 3 for reading and 19% vs. 5% in grade 2 and 10% vs -1% in grade 3 for mathematics. It is clear that the non-remedial children in the treatment schools also benefited from the remedial pilot research activity. This benefit can, in all likelihood, be attributed to (1) their teachers having been trained on the more effective pedagogies of the remedial pilot research activity and applying these more generally in their teaching, and (2) the improved performance of the remedial children changing the performance profile of the class as a whole.

The data shows that male students benefited as much from the remedial pilot research activity as female students. This is encouraging because (1) it is different from what was experienced in the intervention pilot research activity; and (2) given the difference in the nature of the interaction of teachers with their students between the intervention and the remedial research pilot activities, it may provide some insight into how male students need supervision and structuring that differs from that provided to female students.

Moving forward, it is recommended that the fine-grain tool for mathematics be refined (and possibly re-piloted) to ensure that the tool is better able to differentiate between students performing at the KG and 1.1 performance levels.

In conclusion, the remedial pilot research activity has been successful in developing the early grade remedial programs for reading and mathematics that the Ministry of Education identified as a need in response to the 2012 National Survey. It remains now for the MoE to implement the program in all schools across the Kingdom. It is anticipated that this will form part of the Early Grade Reading and Mathematics Initiative (RAMP) that is being implemented by the MoE between 2015 and 2019.

Annex 1:

This Annex contains the following instruments:

- The coarse grain reading assessment for grade 1 (assessor version)
- The coarse grain reading assessment for grades 2 and 3 (assessor version)
- The fine grain reading assessment
- The coarse grain mathematics assessment for grade 1 (assessor version)
- The coarse grain mathematics assessment for grades 2 and 3 (assessor version)
- The fine grain mathematics assessment

First Grade – Reading
Coarse Grain Assessment Tool
(Teacher's Copy)

INSTRUCTIONS TO THE TEACHER

- Prior to the assessment, make sure that every child has a seat, desk, a pencil and a rubber. If possible, re-arrange the children so that there is only one child at a desk. This will ensure they cannot see each other's work. If there are two or more children at a desk put up a barrier (book or bag) between the children so that they cannot see each other's work.
- Give each student a test paper and make sure that they write their name at the top of the test.
- Say to the class:
  🗣 ***We are going to do a short task. For each question I will first tell you where to point so that you are answering the correct question. For each question I will read the instruction and give you time to answer each question. Do not go to the next question until I tell you to do so. Are you ready? Let's begin.***
- For each question:
  - Tell the child to point to the box that corresponds to the question by saying:
    🗣 **Put your finger on the box with the number "3".**
  - Read the question to the class.
  - Tell the children to record their response.
- When the test is completed collect the test papers and mark them according to the marking memorandum.

Name: _____

Put your finger on the box with the number "0"

🗣 Where is the sound ( ) in the word ( )

0	أول	وسط	آخر

🗣 Put your finger on the box with the number "1"

Where is the sound ( ) in the word ( )

1	أول	وسط	آخر

🗣 Put your finger on the box with the number "2"

Where is the sound ( ) in the word ( )

2	أول	وسط	آخر

🗣 Put your finger on the box with the number "3"

Where is the sound ( ) in the word ( )

3	أول	وسط	آخر

🗣 Put your finger on the box with the number "4"

Where is the sound ( ) in the word ( )

4	أول	وسط	آخر

🗣 Put your finger on the box with the number "5"

Where is the sound ( ) in the word ( )

5	أول	وسط	آخر

🗣 Put your finger on the box with the number "6"

Where is the sound ( ) in the word ( )

6	أول	وسط	آخر

🗣 Put your finger on the box with the number "7"

Where is the sound ( ) in the word ( )

7	مَ	مُ	مِ

🗣 Put your finger on the box with the number "8"

Circle the sound ( )

8	صا	صو	صي

Put your finger on the box with the number "9"

Circle the word which contains a stressed letter

9	إِرْبِد	جَرَشُ	عَمّان

Put your finger on the box with the number "10"

Circle the word which contains ( ) (that is pronounced) from the following words

10	الشَّارِعُ	البَيْتُ	النَّظَرُ

Put your finger on the box with the number "11"

Circle the word which contains ( )

11	زَيدٌ	زيدًا	زيدٍ

Put your finger on the box with the number "12"

Circle the right form that contains the syllables of the word ( )

12	مَـ	جْـ	لِسُ	مَجْـ	لِـ	سُ	لِسُ	مَجْـ	مَـ	جْلِـ	سُ

Put your finger on the box with the number "13"

Write what is dictated to you ( )

13	

Put your finger on the box with the number "14"

Write what is dictated to you ( )

14	

Put your finger on the box with the number "15"

Write what is dictated to you ( )

15

Put your finger on the box with the number "16"

Write what is dictated to you ( )

16

Put your finger on the box with the number "17"

Write what is dictated to you ( )

17

Put your finger on the box with the number "18"

Write what is dictated to you ( )

18

Second & Third Grade – Reading
Coarse Grain Assessment Tool
(Teacher's Copy**)**

INSTRUCTIONS TO THE TEACHER

- Prior to the assessment, make sure that every child has a seat, desk, a pencil and a rubber. If possible, re-arrange the children so that there is only one child at a desk. This will ensure they cannot see each other's work. If there are two or more children at a desk put up a barrier (book or bag) between the children so that they cannot see each other's work.
- Give each student a test paper and make sure that they write their name at the top of the test.
- Say to the class:
  🗣 ***We are going to do a short task. For each question I will first tell you where to point so that you are answering the correct question. For each question I will read the instruction and give you time to answer each question. Do not go to the next question until I tell you to do so. Are you ready? Let's begin.***
- For each question:
  - Tell the child to point to the box that corresponds to the question by saying:
    🗣 **Put your finger on the box with the number "3".**
  - Read the question to the class.
  - Tell the children to record their response.
- When the test is completed collect the test papers and mark them according to the marking memorandum.

Name: _____

🗣 Put your finger on the box with the number "0"

Add a sound to the word ( ) to form a new meaningful word

0	عَدّ	ديع	سَعيدُ	يعود

🗣 Put your finger on the box with the number "1"

Substitute the sound ( ) in the word ( ) by another letter to form a new meaningful word

1	عم	سَمَعَ	مع	لَمَعَ

🗣 Put your finger on the box with the number "2"

Circle the word which contains ( ) from the following words

2	مَحْمُودُ	عِمَادُ	جَمِيلُ	حامِدُ

Put your finger on the box with the number "3"

Circle the word which contains ( ) from the following words

3

قرأ المُعَلِّمُ الدَّرْسَ للطُّلابِ

Put your finger on the box with the number "4"

Circle the word which contains ( ) in the following sentence

4

العِنَبُ فاكهتي المُفَضَّلَة فى فصلِ الصَّيفِ.

Put your finger on the box with the number "5"

Circle the word which contains ( ) in the following sentence

5

اشْترى مُحَمَّدٌ قَلَمَ حِبْرٍ جَدِيدًا .

Put your finger on the box with the number "6"

Circle the word which contains ( ) in the following sentence

6

صَلَّى عَلِّيٌ مَعَ أَبيهِ في المسْجِدِ.

Put your finger on the box with the number "7"

Circle the right form that contains the syllables of the word ( )

7

قَـ شَـ تَنْـ اسْـ	نْـ اسْتَـ	قَـ نْشَـ تَـ اسْـ	شَقَ تَنْـ سْـ ا

Put your finger on the box with the number "8"

Specify the meaning of the underlined word: الطائر الحب التقط

8

تركَ رمى شربَ أكلَ

Put your finger on the box with the number "9"

Specify the meaning of the underlined word: عَبَرَ مُحَمَّدٌ الشَّارِعَ

9	أخذَ	سارَ	قطعَ	أحبَّ

Put your finger on the box with the number "10"

Specify the meaning of the underlined word: غيَّرتُ عَجَلَةَ الدَّرَاجَةِ .

10	مِقوَد	إطار	كرسي	سِلك

Put your finger on the box with the number "11"

Specify the meaning of the underlined word: كُنْتُ فى عجَلَةٍ من أمري.

11	سرعةٍ	بطءٍ	قوةٍ	ضعفٍ

Put your finger on the box with the number "12"

Specify the meaning of the underlined word: نَظَرَ سَعِيْدٌ إلى البُسْتَانِ

12	ذهبَ	رجعَ	شاهدَ	سافرَ

Put your finger on the box with the number "13"

Specify the meaning of the underlined word: مُحَمَّدٌ ضَعِيْفُ النَّظَرِ

13	اليد	القلب	القدم	البصر

Put your finger on the box with the number "14"

Choose three words related in meaning to the word: رمَضَانُ

14

هلال	نظارات	رُكبة	صيام
أنف	حاسوب	فطور	رأس

Put your finger on the box with the number "15"

Choose three words related in meaning to the word: عِيْدُ

15

دراسة	قلم	عمل	ضيوف
أوراق	ألعاب	بهجة	مدرسة

Put your finger on the box with the number "16"

Choose three words related in meaning to the word: فَوَاكِهُ

16

عنب	سيارة	مشمش	تفاح
كرسي	أخ	صديق	رجل

Put your finger on the box with the number "17"

Complete the following sentence with an appropriate adjective:

_____ تناثر الزَّهْرُ على الأَرْضِ

17

الرفيعة	السمينة	الخضراء	الطويلة

Put your finger on the box with the number "18"

Complete the following sentence with an appropriate adjective:

_____ نَظَّفَ الطُّلابُ الملعبَ

18

الناعم	الكبير	البارد	الدافئ

Put your finger on the box with the number "19"

Write what is dictated to you قَرَأَ زَيْدٌ قِصَّةً جَمِيلَةً

19	

Put your finger on the box with the number "20"

What do you say when someone gets back from travel?

(_____)

20	

Put your finger on the box with the number "21"

Read the following paragraph to answer the questions that follow:

21	ذهبت سلمى إلى معرض الكتاب السنوي في مدينة عمان، واشترت قصة السندباد وكتاباً حول صناعة الطائرات.

Put your finger on the box with the number "22"

Answer the following question: إلى أي مكان ذهبت سلمى؟

22	معرض الكتاب	دكان الألعاب	حديقة الطيور	سوق الخضار

Put your finger on the box with the number "23"

Answer the following question: ما اسم القصة التي اشترتها سلمى؟

23	الأيام	**السندباد**	كليلة ودمنة	ألف ليلة وليلة

Put your finger on the box with the number "24"

Answer the following question: في أي مدينة كان معرض الكتاب الذي زارته سلمى؟

24	الرّمثا	السّلط	عمّان	العقبة

🗣 Put your finger on the box with the number "25"

Answer the following question: كم مرة يقام معرض الكتاب في العام الواحد؟

25	مرتين	ثلاث مرات	مرة واحدة	أربع مرات

Fine grain individual oral assessment
READING

INSTRUCTIONS TO THE TEACHER

- Make sure that you have the following ready:
  - A fresh test paper for each child
  - A stimulus book
  - Pencil and paper for the child to write on (reading and mathematics)
  - A comfortable setting where you can sit on opposite sides of the table with the child.
- Administer the test starting with the first task.
- For each task:
  - Remember to check if the task uses a stimulus sheet or not and if it does to open the stimulus book to the correct page.
  - Give the child the instructions as provided in the test.
  - Record the response of the child to each item: ✓ = correct, ✗ = incorrect.
  - After completing the task follow the decision rules to determine the next task.
- On reaching the end of the assessment complete the summary table by inserting a (✓) into the space that corresponds to the task on which you stopped for each category.
- Determine the grade equivalent of the student by selecting the grade in which there are the most (✓) marks. If there is more than one grade with the same highest number of tick marks select the lower grade.

Name _____

Class _____ Grade _____

Gender _____ Age _____

Reading	KG	1.1	1.2	2.1	2.2	3.1	3.2
Vocabulary							
Letter sounds							
Phonemic awareness							
Oral Reading and Comprehension							
Writing							
Grade equivalent of the student							

Vocabulary

General instructions

1. Read the text slowly with correct inflections
2. Correct answers in slang language are accepted
3. Mark each item and complete the total for each set of questions.
4. Follow the instructions at the end of each section to move to next task to be assessed.

Start: five to seven years	2.1	2.2	Start: over 8 years	3.1	3.2
×📖		×📖	×📖		×📖
Question ✍		Question ✍	Question ✍		Question ✍
🗣What is the meaning of the word that I will specify in the following sentences:		🗣What is the meaning of the word that I will specify in the following sentences:	🗣What is the meaning of the word that I will specify in the following sentences:		🗣What is the meaning of the word that I will specify in the following sentences:
شَقَّ الصَّيّادُ بَطْنَ السَّمكَةِ فَوَجَدَ لُؤْلُؤَةً ثَمينَةً.(فتح)		لم يذهبِ الطلبةُ إلى المدرسةِ لأنَّ الثلجَ كانَ عائقًا. (مانعًا)	تَحَلَّقَ الأطْفَالُ حَوْلَ الْمُعَلِّمَةِ لِسَماعِ الْقِصَّةِ. (التف – تجمّع)		دَرَسَ الفلاحُ الزَّرعَ ليستخرجَ حبّاتِ القمحِ الذهبيةِ. (نقّى – فك – عزل – فصل – حصد – جمع)
قَرَعَ الوَلَدُ جَرَسَ المَدْرَسَةِ. (دقّ – رنّ – ضرب)		لم تشترِ سلمى اللعبةَ لأنّها باهظةُ الثمنِ. (غالية – مرتفعة)	قَدَّمَ الْجَيْشُ الْعَرَبِيُّ تَضْحِياتٍ جَسِيمَةً . (كبيرة – عظيمة)		يرتادُ الطَّلبةُ المكتباتِ حبًّا للعلمِ (يزور –يذهب)
شاهدتُ سِربًا من الطيورِ يطيرُ عاليًا في السماءِ. (جماعة – مجموعة)		ضَمَّدَ الطَّبيبُ جُرْحَ عاصِمٍ فَتَوَقَّفَ الدَّمُ. (لفّ – داوى – عالج)	🗣 Differentiate the meaning of the following words:		🗣 Differentiate the meaning of the following words:
🗣 Differentiate the meaning of the following words:		🗣 Differentiate the meaning of the following words:	صَمَّمَ الْمُهَنْدِسُ بَيْتًا جَميلاً. (شكّل – رسم – خطط)		يجني الفلاحُ الثّمارَ النّاضجة. (يقطف – يجمع – يحصد)
زُرْتُ مَنْزِلَ خالي يَوْمَ العيدِ. (أخو أمي)		أخبرَ الطِّفلُ أُمَّهُ بما يجري. (يحدث – يصير – يحصل)	صَمَّمَ الْوَلَدُ عَلى النَّجاحِ. (أصرّ – ألحّ)		يجني السّارقُ على نفسهِ.(يقضي – يهلك – يقتل – يوقع نفسه في المهالك)
أَشْرَبُ العَصيرَ الخالي مِنَ السُّكَّرِ. (الفارغ ، لا يحتوي)		يجري الماءُ في النَّهرِ(يسير – يتدفق – يمشي)	وَصَلَ الْمُتَسابِقُ إلى خَطِّ النِّهايَةِ.(انتهى – بلغ)		عادَ الطلابُ زميلهم المريضَ. (زار)
عادَ أَحَدُ المُسَافِرِينَ مِنْ رِحْلَتِهِ مُتْعَبًا.(واحد– شخص واحد)		أُحِبُّ الذّهابَ إلى واحةِ الأزرقِ. (مدينة – مكان)	وَصَلَ الطَّالِبُ الأسْلاكَ الْكَهْرَبائِيَّةَ . (ربط –جمع – ضمّ) .		عادَ المسافرُ إلى وطنِهِ سالمًا.(رجع)
يَبْدَأُ الدَّوامُ الرَّسْمِيُّ لِلطَّلَبَةِ يَوْمَ الأَحَدِ.(يوم)		حنينُ تحبُّ الفستانَ الأزرقَ.(لون أزرق)	🗣Give three words related to the following word:		🗣Give three words related to the following word:
🗣Give three words related to the following word:		🗣Give three words related to the following word:	مَصْنَع . (عامل – آلة – بضاعة…)		سَيّارَةٌ(سائق – راكب – شارع …)
أَسْنانٌ(فم – فرشاة – معجون – لثة …)		بُستانٌ(أشجار – فلّاح – مزارع – ماء…)	🗣 complete the following sentences using the appropriate description:		🗣 complete the following sentences using the appropriate description:
مَلْعَبٌ(كرة – حكم – جمهور – هدف…)		بحرٌ(ماء –شاطئ– سفينة…)	أَعَادَ الطَّالِبُ النُّقُودَ… (الضائعة – المفقودة – الكثيرة)		تكرم المديرة الطالبات…(المتفوقات – الفائزات – النجيبات…) .
🗣 complete the following sentences using the appropriate description:		🗣 complete the following sentences using the appropriate description:	حَقَّقَ الفريقُ فَوْزًا …(عظيمًا – كبيرًا – هائلاً)		تُستخْدَمُ المبيداتُ لقتلِ الحشراتِ …(الضارة – غير النافعة – غير المفيدة)
هذهِ مشكلةٌ (كبيرة – صعبة – شديدة– سهلة – بسيطة)		أَحَسَّ المَريضُ بِالأَلَمِ (الشديد…)	أعط كلمتين تشاركان كلمة (كتبَ) في حروفها (كاتب – مكتوب – كتاب – مكتبة …)		أعط ثلاث كلمات تشارك كلمة(بَحَثَ) في حروفها (باحث – مبحوث – بَحْث – بحّاث …)
سَافَرَ أَبي إلى بِلادٍ (بعيدة – جميلة – واسعة – كبيرة)		ارتفعت الرَّايةُ فوقَ الساريةِ (العالية – الطويلة – المرتفعة)			
Total (11)		Total (11)	Total (10)		Total (10)
		Total < 5: 2.1	Total < 4: 2.2		Total < 5: 3.1
Total > 8: 2.2		Total > 8: 3.1	Total > 7: 3.2		
Stop and go to Letter sound 2.1		Stop and go to Letter sound 2.2	Stop and go to Letter sound 3.1		Stop and go to Letter sound 3.2

Letter sound													
General instructions:		1. Allow the student 5 seconds to respond to each item. 2. Mark each item and complete the total for each set of questions.						3. Follow the instructions at the end of each section to move to next task to be assessed.					
KG		1.1		1.2		2.1		2.2		3.1		3.2	
✗🕮		✓🕮		✓🕮		✓🕮		✓🕮		✓🕮		✓🕮	
Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍
		🗣Read the sound of the following:		🗣Read the sound of the following:		🗣Read the sound of the following:		🗣Read the sound of the following:		🗣Read the sound of the following:		🗣Read the sound of the following:	
		عَ		ها		سِهامُ		خالدٌ		ذَهَبَتْ		اتّصَلَ	
		لُ		ظي		ثِمارُ		حَنينُ		رُلى		عَمرُو	
		بِ		ضو		أَزْهارِ		رُبوعُ		إلى		بَأصْدِقائِهِ	
		را		صادَ		يَحْمي		فادي		السّوقِ		شادي	
		ثو		سوسُ		فَرَشَ		مُنى		واسْتَمْتَعَتْ		و مُصْطفى	
		تي		قَلَمُ		غُرورٌ		الْماءَ		بِالسَّيْرِ		واتّفقوا	
		جادَ		سَهْمًا		نَظّمَ		السّحابُ		على		على	
		دارَ		أَرْضٍ		سَيْفًا		قَلَّبَ		الأَقْدامِ		الذّهابِ	
		نورُ		حَسَنٌ		أَجْهِزَةٌ		يُشَدِّدُ		زَارَتْ		إلى	
		زارَ		مُحمَّدٌ		شَجَرٍ		تَنَوّعَ		عُلا		ذَلِكَ	
		ريشُ		العَمَلُ		هُدى		مُسْتَقيمٌ		غَوْرَ		الْمَسْجِدِ	
		سَريعُ		الشَّمسُ		مُسْتطيلٌ		اسْتِمْتاعُ		الصّافي		الْقَريبِ	
		Total (12)		Total (12)		Total (12)		Total (12)		Total (12)		Total (12)	
				Total < 4: 1.1		Total < 4: 1.2		Total < 4: 2.1		Total < 4: 2.2		Total < 4: 3.1	
		Total > 9: 1.2		Total > 9: 2.1		Total > 9: 2.2		Total > 9: 3.1		Total > 9: 3.2			
		Stop and go to Listening comprehension 1.1		Stop and go to Listening comprehension 1.2		Stop and go to Listening comprehension 2.1		Stop and go to Listening comprehension 2.2		Stop and go to Listening comprehensio n 3.1		Stop and go to Listening comprehension 3.1	

Listening comprehension:																								
General instructions:		1. Allow the student 5 seconds to respond to each item. 2. Mark each item and complete the total for each set of questions.										3. Follow the instructions at the end of each section to move to next task to be assessed.												
KG		1.1		1.2		2.1		2.2		3.1		3.2												
×📖		×📖		×📖		×📖		×📖		×📖		×📖												
Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍											
🗣 What is the sound of the first letter that you hear in the following words:		🗣 What is the first syllable that you hear in the following word:		🗣 What is the first syllable that you hear in the following word:		🗣 Delete the sound of the first letter in the beginning of the following words and pronounce the new word:		🗣 Delete the sound of the first letter in the beginning of the following words and pronounce the new word:		🗣 Delete the sound of the first letter in the beginning of the following words and pronounce the new word:														
كَتَبَ		سَامِحُ		يَرْكضُ		جَمالٌ		سُعادُ		مُسافر														
سَمِعَ		مَسْجِدُ		مُرتَضى		سَماءُ		جِدارُ		يَدقّ														
خُبْزُ		يَرْمي		مُسْتَشفى		رِجالٌ		نِساءُ		عَذاب														
سِهامُ		🗣 What is the last syllable that you hear in the following word:		🗣 What is the second syllable that you hear in the following word:		قَلَمْ		كَبيرُ		🗣 Add a sound to the beginning of the following words:														
قَلَمٌ						كريمٌ		جَمَعَ																
قِرْدُ		أرضُ		سِتارٌ		أُسامِحُ		سَعيدُ		قِف (يقف)														
مُنى		منهُ		أزهارُ				🗣 Add a sound to the beginning of the following words to read new words:		قَم (رقم – سقم…)														
رِضا		زارَ		طُيورُ						رَج (درج – فرج – حرج – هرج…)														
				🗣 What is the last syllable that you hear in the following word:				هَر		🗣 Substitute the first sound of the following words:														
								مَر																
				مُصطفى				سَد		كمالُ														
				رياحٌ				ماء		ماهرُ														
				هاتفًا				رَف		سميرةُ														
Total (8)		Total (6)		Total (9)		Total (6)		Total (11)		Total (9)														
		Total <3: KG		Total <4: 1.1		Total < 3: 1.2		Total < 5: 2.1		Total < 4: 2.2														
Total > 4: 1.1		Total > 4: 1.2		Total > 6: 2.1		Total > 4: 2.2		Total > 7: 3.1																
Stop and go to writing (KG)		Stop and go to writing 1.1		Stop and go to the oral reading and comprehension 1.2		Stop and go to the oral reading and comprehension 2.1		Stop and go to the oral reading and comprehension 2.2		Stop and go to the oral reading and comprehension 3.1														

Oral reading and comprehension

1.2					2.1					2.2				
✓🕮					✓🕮					✓🕮				
Question				✍	Question				✍	Question				✍
🗣This is a short story, be careful and read it clearly and loudly. When you finish, I will ask you some questions on what you have read. When I tell you "let's start", start reading, ready? Let's start.					🗣This is a short story, be careful and read it clearly and loudly. When you finish, I will ask you some questions on what you have read. When I tell you "let's start", start reading, ready? Let's start.					🗣This is a short story, be careful and read it clearly and loudly. When you finish, I will ask you some questions on what you have read. When I tell you "let's start", start reading, ready? Let's start.				
ذَهبَتْ	تَتَحرَّكُ.	بِسِنِّهَا	فَقَالَتْ:	أَحسَّتْ	اسْتَأذَنَتِ	النَّحْلَةُ	مِنْ	الوَرْدَةِ	أنْ	قَرَّرَتِ	الأُسرَةُ	القِيامَ	بِرِحْلَةٍ	لِمَحمّيةِ
سَتنمو	لَا تَخَافِي	مُعَلِّمَتِهَا،	إِلَى	إِلَى	تَأخُذَ	رَحيقَهَا.	سَأَلَتْها	الوَرْدَةُ:	ماذَا	غَاباتِ	عَجلونَ	لجَوّها	اللَّطيفِ،	وتَنوُّع
سِنٌّ	جَدِيدةٌ.				سَتَفْعَلينَ	بِرَحيقي؟	أَجابَتْ	سَأصنَعُ	العَسَلَ.	نَبَاتَاتِها	وحَيَوانَاتِها،	فَتَتَعرَّفَ	بيئَةً	جَديدَةً.
Total (12)					Total (15)					Total (15)				
					Total < 6: 1.2					Total < 6: 2.1				
Total > 7 : Ask the student the comprehension questions					Total > 10 : Ask the student the comprehension questions					Total > 10 : Ask the student the comprehension questions				
Stop and go to writing 1.2					Stop and go to writing 2.1					-				
ماذا حَصَلَ لِسِنِّ لَيْلَى ؟ (تحركت)					مَنْ أَبْطالُ القِصَّةِ؟ (الوردة والنحلة)					ما الَّذِي أَرَادَتْ الأُسْرَةُ الْقِيام به؟ (القيام برحلة)				
بماذا شَعَرَتْ لَيْلَى ؟ (بالخوف)					لِماذَا اسْتَأذَنَتْ النَّحْلَةُ مِنَ الوَرْدَةِ؟(لتأخذ رحيقها)					اذْكُرْ اسْمَ المَكانِ الّذي اتَّفَقَتِ الأُسْرَةُ على زيارته ؟ (محمية غابات عجلون)				
إِلَى مَنْ ذهبت لَيْلَى ؟ (إلى المعلمة)					ماذَا سَأَلَتْ الوَرْدَةُ ؟ (ماذا ستصنعين برحيقي)					لماذا اخْتَارَتِ الأُسْرَةُ مَحميَّةَ غاباتِ عَجْلونَ(لجَوّها اللَطيف وتَنوُّع حَيواناتِها ونَباتَاته)				
مَاذَا سينمو لِلَيْلَى ؟ (سن جديدة)					ماذا سَتَصْنَعُ النَّحْلَةُ مِنَ الرَّحيقِ ؟(العسل)					ماذا سَتَتَعرفُ الأُسْرَةُ في مَحميَّةَ غاباتِ عَجْلونَ؟ (بيئة جديدة)				
Total (4)					Total (4)					Total (4)				
Total > 2: 2.1					Total > 2: 2.2					Total > 2: 3.1				
Stop and go to writing 1.2					Stop and go to writing 2.1					Stop and go to writing 2.2				

Oral reading and comprehension									
3.1					3.2				
✓🕮					✓🕮				
Question				✍	Question				✍
🗣This is a short story, be careful and read it clearly and loudly. When you finish, I will ask you some questions on what you have read. When I tell you "let's start", start reading, ready? Let's start.					🗣This is a short story, be careful and read it clearly and loudly. When you finish, I will ask you some questions on what you have read. When I tell you "let's start", start reading, ready? Let's start.				
تَعاوَنَ	رامي	وَرَشا	لِصُنْعِ	طَيَّارَةٍ	وَالِدَةُ	سَلْوَى	مُبْدِعَةٌ	تُحَولُ	الْأَشْيَاءَ
وَرَقِيَّةٍ.	لَوَّناها	بِالْأَحْمَرِ	وَالْأَسْوَدِ	وَالْأَخْضَرِ	لِمَوادَّ	جَديدَةٍ؛	تنْسِجُ	من	الْخُيُوطِ
وَالْأَبْيَضِ،	ورَسَما	نَجْمَةً	سُباعِيَّةً.	ارْتَفَعَتِ	بِسَاطًا،	وتصنعُ	مِنَ	الزَّيْتِ	صَابونًا،
الطَّيَّارَةُ	فَفَرحا	لِرُؤيَةِ	العَلَمِ	مُحَلِّقًا.	ومِنَ	العِنَبِ	زَبِيبًا،	وتُعيدُ	اسْتِخْدَامَ
					الْعُلَبِ	الفَارِغَةِ	لتَحْفَظَ	فيها	أَدَواتِها.
Total (20)					Total (25)				
Total < 7: 2.2					Total < 9: 3.1				
Total > 15 : Ask the student the comprehension questions					Total > 17 : Ask the student the comprehension questions				
Stop and go to writing 3.1					Stop and go to writing 3.2				
من تَعاوَنَ لصُنْعِ الطَّيَّارَةِ الْوَرَقِيَّةِ؟(رامي ورشا)					لِمَاذَا تُعَدُّ أُمُّ سَلْوَى مُبْدِعَةً ؟ (لأنها تحول الأشياء لمواد جديدة)				
ما أَلْوانُ الطَّيَّارَةِ الْوَرَقِيَّةِ ؟(أحمر وأخضر وأسود وأبيض)					مَاذا صَنَعَتْ أم سَلْوَى من الْخُيُوطِ ؟ (بساطاً)				
ما شَكْلُ النَّجْمَةِ الَّتي رُسِمتْ على الطَّيَّارَةِ ؟(سباعية)					من أي شيء تَصْنَعُ الصَّابُونَ ؟ (من الزيت)				
بِعَلَمِ أَيِّ دَوْلَةٍ لُوِّنت الطَّيَّارَةُ ؟ (الأردن)					مَاذَا تحضّر أُمُّ سَلْوَى مِنْ الْعِنَبِ ؟ (الزبيب)				
Total (4)					Total (4)				
Total > 2: 3.2									
Stop and go to writing 3.1					Stop and go to writing 3.2				

Writing

General instructions:	1. Allow the student 5 seconds to respond to each item. 2. Mark each item and complete the total for each set of questions.	3. Follow the instructions at the end of each section to move to next task to be assessed.

KG		1.1		1.2		2.1		2.2		3.1		3.2	
×🕮		✓🕮		✓🕮		×🕮		×🕮		×🕮		×🕮	
Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍
🗣 Write what is dictated to you:		🗣 Complete the words according to what you hear:		🗣 Complete the words according to what you hear:		🗣 Write what is dictated to you:		🗣 Write what is dictated to you: رَافَقَ مُحَمَّدٌ والِدَهُ إلى صَلاةِ الجُمُعَةِ .		🗣 Write the sentence that you hear using the appropriate: لَوَّثَتِ الْنُّفَايَاتُ المياهَ العَذْبَةَ.		🗣 Write the sentence that you hear using the appropriate: طَافَ الحُجّاجُ حَوْلَ الكَعْبَةِ.	
بَ		ـــفّاح (ت)		ـــتَحَ (ف)		مُصْطَفى		رَافَقَ					
فَ		بَيْـــ (ت)		قَطَـــ (ف)		مَسْعود		مُحَمَّدٌ					
مَ		مَلْـــب (ع)		مَـــارْ (ط)		اكْتَشَفَ		والِدَهُ		لَوَّثَتِ		طَافَ	
دَ		رَبِيـــ (ع)		بَـــ (ط)		🗣 Write what is dictated to you: كَتَبَ الوَلَدُ الدَّرْسَ		إلى		الْنُّفَايَاتُ		الحُجّاجُ	
		يَـــرَب (ش)		🗣 Write down the following word:				صَلاةِ		المياهَ		حَوْلَ	
		يَعيـــ (ش)		رامي		كَتَبَ		الجُمُعَةِ		العَذْبَةَ.		الكَعْبَةِ.	
				مُعَلّم		الوَلَدُ				🗣Complete the sentence to have a proper meaning: عِنْدَما يَأْتي شَهْرُ رَمَضانَ أَقُولُ لِأَصْدِقائِي(رمضان كريم)		🗣Complete the sentence to have a proper meaning: في عيدِ الفِطْرِ السَّعيدِ، ذَهَبْتُ لِأُهَنِّئَ أَصْدِقائي فَقُلْتُ لَهُم(عيد سعيد)	
						الدَّرْسَ							
Total (4)		Total (6)		Total (6)		Total (6)		Total (6)		Total (5)		Total (5)	
		Total < 3: KG		Total < 3: 1.1		Total < 3: 1.2		Total < 3: 2.1		Total < 3: 2.2		Total < 3: 2.2	
Total > 2: 1.1		Total > 2: 1.2		Total > 2: 2.1		Total > 2: 2.2		Total > 2: 3.1		Total > 2: 3.2			
Stop and go to the summary		Stop and go to the summary		Stop and go to the summary		Stop and go to the summary		Stop and go to the summary		Stop and go to the summary		Stop and go to the summary	

Coarse Grain Assessment Tool

(Teacher's Copy)

INSTRUCTIONS TO THE TEACHER

- Prior to the assessment, make sure that every child has a seat, desk, a pencil and a rubber. If possible, re-arrange the children so that there is only one child at a desk. This will ensure they cannot see each other's work. If there are two or more children at a desk put up a barrier (book or bag) between the children so that they cannot see each other's work.
- Give each student a test paper and make sure that they write their name at the top of the test.
- Say to the class:
  🗣 ***We are going to do a short task. For each question I will first tell you where to point so that you are answering the correct question. For each question I will read the instruction and give you time to answer each question. Do not go to the next question until I tell you to do so. Are you ready? Let's begin.***
- For each question:
  - Tell the child to point to the box that corresponds to the question by saying:
    🗣 **Put your finger on the box with the number "3".**
  - Read the question to the class.
  - Tell the children to record their response.
- When the test is completed collect the test papers and mark them according to the marking memorandum.

Name: _____

🗣 Put your finger on rectangle number "0"

Circle the symbol that represents the number one

0	٢	١	٣

🗣 Put your finger on rectangle number "1"

Circle the symbol that represents the number three

1	٢	١	٣

🗣 Put your finger on rectangle number "2"

Circle the symbol that represents number five

2	٥	٧	٨

Put your finger on rectangle number "3"

Circle the word for the number 2

3 واحد اثنان ثلاثة

Put your finger on rectangle number "4"

Circle the word for the number 4

4 أربعة ثلاثة خمسة

Put your finger on rectangle number "5"

Put (✓) below the larger group

5 

Put your finger on rectangle number "6"

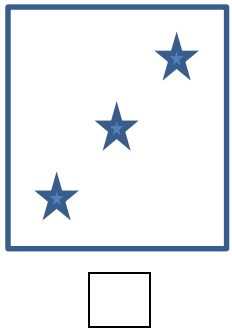
Put (✓) below the larger group

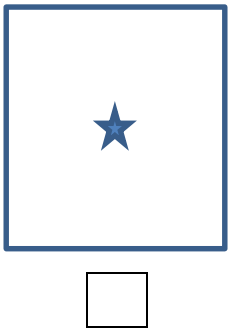
6 

Put your finger on rectangle number "7"

Put (✓) below the smaller group

7

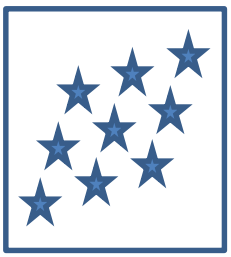


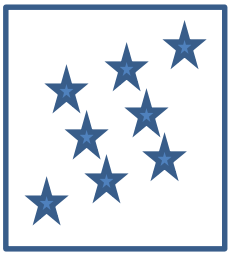


Put your finger on rectangle number "8"

Put (✓) below the smaller group

8





Put your finger on rectangle number "9"

Circle the largest number

9 ٩ ٧ ٦

Put your finger on rectangle number "10"

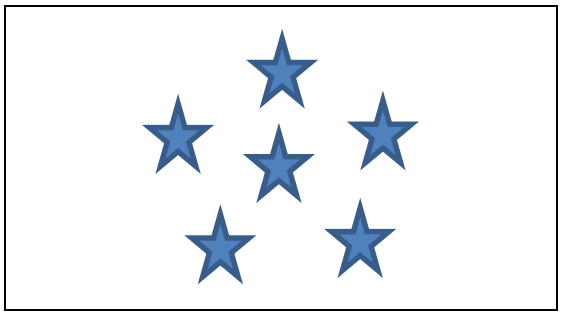
Circle the smallest number

10 ١١ ٤ ٧

Put your finger on rectangle number "11"

How many objects are there? Circle the correct number

11

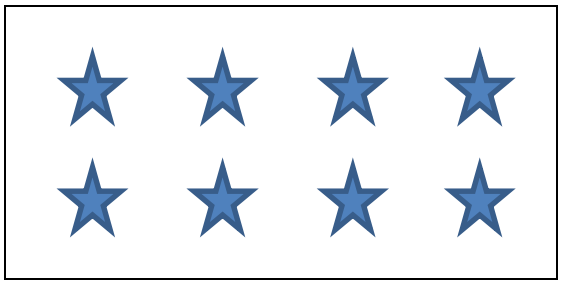


٥ ٦ ٧ ٨

Put your finger on rectangle number "12"

How many objects are there? Circle the correct number

12

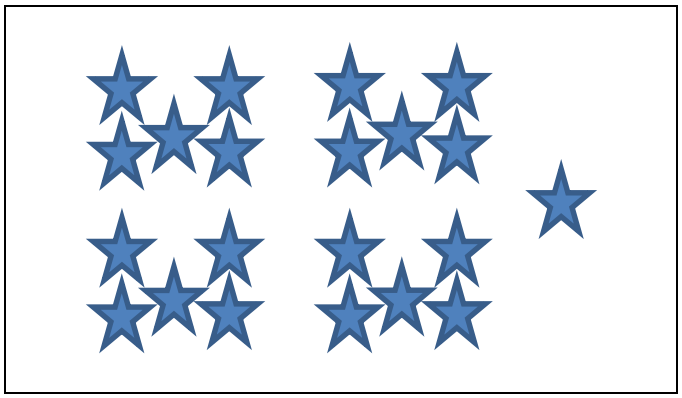


٥ ٦ ٧ ٨

Put your finger on rectangle number "13"

How many objects are there? Circle the correct number

13



١٥ ١٧ ٢١ ٢٢

Put your finger on rectangle number "14"

Write the number that solves the problem into the space.

14 $\square = ٣ + ١$

Put your finger on rectangle number "15"

Write the number that solves the problem into the space.

15 $٥ = ٢ + \square$

Put your finger on rectangle number "16"

Write the number that solves the problem into the space.

16 $٦ = \square - ٨$

Put your finger on rectangle number "17"

Write the number that solves the problem into the space.

17 $\square = ٤ - ٩$

Put your finger on rectangle number "18"

Write the number that solves the problem into the space.

18 $\square = ٣ + ١٢$

Put your finger on rectangle number "19"

Write the number that solves the problem into the space.

19 $\square = ٢ + ٧$

🗣 Put your finger on rectangle number "20"

Write the number that solves the problem into the space.

20

١٠ = ☐ − ١٥

Coarse Grain Assessment Tool

(Teacher's Copy)

INSTRUCTIONS TO THE TEACHER

- Prior to the assessment, make sure that every child has a seat, desk, a pencil and a rubber. If possible, re-arrange the children so that there is only one child at a desk. This will ensure they cannot see each other's work. If there are two or more children at a desk put up a barrier (book or bag) between the children so that they cannot see each other's work.
- Give each student a test paper and make sure that they write their name at the top of the test.
- Say to the class:
  🗣 ***We are going to do a short task. For each question I will first tell you where to point so that you are answering the correct question. For each question I will read the instruction and give you time to answer each question. Do not go to the next question until I tell you to do so. Are you ready? Let's begin.***
- For each question:
  - Tell the child to point to the box that corresponds to the question by saying:
    🗣 **Put your finger on the box with the number "3".**
  - Read the question to the class.
  - Tell the children to record their response.
- When the test is completed collect the test papers and mark them according to the marking memorandum.

Name: _____

🗣 Put your finger on the box with the number "0"

Circle the symbol that represents the number five

0	٥	٦	٧

🗣 Put your finger on the box with the number "1"

Circle the symbol that represents the number one hundred sixty-five

1	١٥٦	١٦٥	٦٥١

🗣 Put your finger on the box with the number "2"

Circle the symbol that represents number three-quarters

2	$\frac{٣}{٤}$	$\frac{٤}{٣}$	$\frac{٢}{٤}$

Put your finger on the box with the number "3"

Circle the word for the number 37

3	سبع وثلاثون	ثلاث وسبعون	سبع وعشرون

Put your finger on the box with the number "4"

Complete the pattern with the missing number:

٣٠ ، ٢٥ ، ☐ ، ١٥

4	٤٠	٢٠	١٠

Put your finger on the box with the number "5"

Complete the pattern with the missing number:

١٥٠ ، ☐ ، ١٣٠ ، ١٢٠

5	١٤٠	١٢٥	١٣٥

Put your finger on the box with the number "6"

Complete the pattern with the missing number:

☐ ، ٣٢٥٠ ، ٣١٥٠ ، ٣٠٥٠

6	٣٣٠٠	٣٢٠٠	٣٣٥٠

Put your finger on the box with the number "7"

Complete the pattern with the missing number:

١١٢ ، ١١٤ ، ☐ ، ١١٨

7	١١٧	١١٦	١١٥

Put your finger on the box with the number "8"

Circle the largest number

8	٤٣	٥٧	٤١

🗣 Put your finger on the box with the number "9"

Circle the largest number

9

٦٩٢	٦٢٩	٦٨٢

🗣 Put your finger on the box with the number "10"

Circle the smallest number

10

٣٠٩	٣٥١	٣٤٠

🗣 Put your finger on the box with the number "11"

Circle the smallest number

11

$\frac{٢}{٩}$	$\frac{١}{٩}$	$\frac{٥}{٩}$

🗣 Put your finger on the box with the number "12"

Put (✓) below the numbers arranged from the largest number to the smallest number

12

٥٠ ،٤٢ ،٦٧	٦٧ ، ٥٠ ، ٤٢	٤٢ ، ٥٠ ، ٦٧
☐	☐	☐

🗣 Put your finger on the box with the number "13"

Put (✓) below the numbers arranged from the smallest number to the largest number

13

٥٠ ، ٥٩ ، ٥٤ ، ٥٧	٥٩ ، ٥٧ ، ٥٤ ، ٥٠	٥٤ ، ٥٠ ، ٥٩ ، ٥٧
☐	☐	☐

🗣 Put your finger on the box with the number "14"

Put (✓) below the numbers arranged from the largest number to the smallest number

14

$\frac{٥}{٦}, \frac{٤}{٦}, \frac{٢}{٦}$	$\frac{٢}{٦}, \frac{٥}{٦}, \frac{٤}{٦}$	$\frac{٢}{٦}, \frac{٤}{٦}, \frac{٥}{٦}$
☐	☐	☐

Put your finger on the box with the number "15"

Write the number that solves the problem into the space.

15 ٧ = ☐ + ٤

Put your finger on the box with the number "16"

Write the number that solves the problem into the space.

16 ☐ + ٦٦ = ٧٠

Put your finger on the box with the number "17"

Write the number that solves the problem into the space.

17 ٨٠ = ☐ - ٨٥

Put your finger on the box with the number "18"

Write the number that solves the problem into the space.

18 ٦ + ☐ + ١٠٠ = ١٣٦

Put your finger on the box with the number "19"

Write the number that solves the problem into the space.

19 ☐ = ٨٣ + ٢٠٧

Put your finger on the box with the number "20"

Write the number that solves the problem into the space.

20 ☐ = ٨ + ٧

🗣 Put your finger on the box with the number "21"

Write the number that solves the problem into the space.

21 ☐ = ٧ – ١٩

🗣 Put your finger on the box with the number "22"

Write the number that solves the problem into the space.

22 ☐ = ٤٥ + ٢٦٢

🗣 Put your finger on the box with the number "23"

Write the number that solves the problem into the space.

23 ☐ = ٣٨ – ٣٥٦

🗣 Put your finger on the box with the number "24"

Write the number that solves the problem into the space.

24 ☐ = ١٠ × ١٦

🗣 Put your finger on the box with the number "25"

Write the number that solves the problem into the space.

25 ☐ = ٢ ÷ ٢٦

Fine grain individual oral assessment
MATHEMATICS

INSTRUCTIONS TO THE TEACHER

- Make sure that you have the following ready:
  - A fresh test paper for each child
  - A stimulus book
  - Pencil and paper for the child to write on (reading and mathematics)
  - A comfortable setting where you can sit on opposite sides of the table with the child.
- Administer the test starting with the first task.
- For each task:
  - Remember to check if the task uses a stimulus sheet or not and if it does to open the stimulus book to the correct page.
  - Give the child the instructions as provided in the test.
  - Record the response of the child to each item: ✓ = correct, ✗ = incorrect.
  - After completing the task follow the decision rules to determine the next task.
- On reaching the end of the assessment complete the summary table by inserting a (✓) into the space that corresponds to the task on which you stopped for each category.
- Determine the grade equivalent of the student by selecting the grade in which there are the most (✓) marks. If there is more than one grade with the same highest number of tick marks select the lower grade.

Name _____

Class _____ Class _____

Gender _____ Gender _____

Mathematics	KG	1.1	1.2	2.1	2.2	3.1	3.2
Operations with numbers							
Manipulating numbers							
Comparing and ordering numbers							
Reading and writing numbers							
Counting							
Pattern completion							
Grade equivalent of the student							

Operations with numbers															
General instructions:	1) Clearly read the instructions to the student. 2) Mark each item and complete the total for each set of questions. 3) Follow the instructions at the end of each section to move to next task to be assessed.														
						Start: five to seven years						Start: over 8 years			
KG		1.1		1.2		2.1		2.2				3.1		3.2	
✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮				✓ 🕮		✓ 🕮	
Question	✍	Question	✍	Question	✍	Question	✍	Question	✍			Question	✍	Question	✍
				🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:				🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:	
				[٥] = ٣ + ٢		[١٥] = ٨ + ٧		[١٧٩] = ٥٢ + ١٢٧				[٣٠٧] = ٤٥ + ٢٦٢		[٤٦١] = ٨٦ + ٣٧٥	
				[٤] = ١ – ٥		[١٢] = ٧ – ١٩		[١١٣] = ٢١ – ١٣٤				[٣١٨] = ٣٩ – ٣٥٧		[١٢٧] = ٧٨ – ٢٠٥	
				[٣٧] = ٣٤ + ٣		[٥٤] = ٨ + ٤٦		[١٩١] =٧٨+١١٣				[٨٠] = ٥ × ١٦		[٢٤٠] = ١٥ × ١٦	
				[٢٢] = ٦ – ٢٨		[٢٥] = ٧ – ٣٢		[٩٧] = ٧٠–١٦٧				[٣٠٠] = ٢ × ١٥٠		[٢٢٥٠] = ٩ × ٢٥٠	
				[٥٣] = ٤٨ + ٥		[٦١] = ٢٥ + ٣٦		[٢١٣] = ٧٦ + ١٣٧				[٣٢] = ٢ ÷ ٦٤		[١٣] = ٤ ÷ ٥٢	
				[٢٦] = ٩ – ٣٥		[٢٢] = ١٨ – ٤٠		[٥٦] = ٨ × ٧				[٥٣] = ٢٧ – ٨٠		[٤٢] = ٤ ÷ ١٦٨	
				Total (6)		Total (6)		Total (6)				Total (6)		Total (6)	
						Total < 3: 1.2		Total < 3: 1.1				Total < 3: 2.2		Total < 3: 3.1	
				Total > 4: 2.1		Total > 4: 2.2		Total > 4: 3.1				Total > 4: 3.2			
				Stop and go to Manipulating numbers 1.2		Stop and go to Manipulating numbers 2.1		Stop and go to Manipulating numbers 2.2				Stop and go to Manipulating numbers 3.1		Stop and go to Manipulating numbers 3.2	

Manipulating numbers													
General instructions:	1) Clearly read the instructions to the student. 2) Mark each item and complete the total for each set of questions. 3) Follow the instructions at the end of each section to move to next task to be assessed.												
KG	1.1		1.2		2.1		2.2		3.1		3.2		
	✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		
Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍
		🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:		🗣 Determine the number that solves the problem:	
		[٤] = ٣ + ١		[٩]= ٧ + ٢		٥٧ = ٥٠ + [٧]		٧٠ = ٦٦ + [٤]		[١٩٠] = ١ + ١٨٩		٧ + ٥٠ + [١٠٠] = ١٥٧	
		٣ + [٢] = ٥		[٣] = ٥ – ٨		٤٠ = [٩] – ٤٩		٨٠ = ٨ – [٨٨]		[١١٣] = ٥ + ١٠٨		[١٧٢] = ١٣ + ١٥٩	
		[٣] = ٣ – ٦		[٣٦] = ٦ + ٣٠		٩٠ = [٣] + ٨٧		[١٨٠] = ٧ + ١٧٣		٦ + [٢٠] + ١٠٠ = ١٢٦		[٤٠٠] + ٦ = ٤٠٦	
		٧ = ٧ + [٠]		[٤٠] = ٦ – ٤٦		٧٠ = [٥] – ٧٥		١٥٠ = [٩] – ١٥٩		[١٠٠] = ٤٤ + ٥٦		٣٠٣= [٤٠] – ٣٤٣	
		[١١] = ١ + ١٠		[١٠] = ٢ + ٨		[١٠٣] = ٣ + ١٠٠		[١٥٣] = ١٠٠ + ٥٠ + ٣		١٠٧ = [٦٠] – ١٦٧		[١١٢] = ٢٥ + ٨٧	
		١٠ = [٥] - ١٥		٩٣ = [٣] + ٩٠		[٢٤] = ٦ + ١٨		[١٠٠] = ٤٠ + ٦٠		[٢١٠] = ٨٠ + ١٣٠		[٣٠٠] = ٩٣ + ٢٠٧	
		Total (6)		Total (6)		Total (6)		Total (6)		Total (6)		Total (6)	
				Total < 3: 1.1		Total < 3: 1.2		Total < 3: 2.1		Total < 3: 2.2		Total < 3: 3.1	
		Total > 4: 1.2		Total > 4: 2.1		Total > 4: 2.2		Total > 4: 3.1		Total > 4: 3.2			
		Stop and go to comparing and ordering of numbers 1.1		Stop and go to comparing and ordering of numbers 1.2		Stop and go to comparing and ordering of numbers 2.1		Stop and go to comparing and ordering of numbers 2.2		Stop and go to comparing and ordering of numbers 3.1		Stop and go to comparing and ordering of numbers 3.2	

Comparing and ordering numbers

General instructions:
1) Clearly read the instructions to the student.
2) Do not read the numbers to the student.
3) Mark each item and complete the total for each set of questions.
4) Follow the instructions at the end of each section to move to next task to be assessed.

KG	1.1		1.2		2.1		2.2		3.1		3.2	
	✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮	
	Question	🚫	Question	🚫	Question	🚫	Question	🚫	Question	🚫	Question	🚫
	🗣 Which is greater?		🗣 Which is greater?		🗣 Which is larger?		🗣 Which is larger?		🗣 Which is larger?		🗣 Which is larger?	
	١٢ حبة فاصولياء أم ٥ حبات		٨ أزرار أم ١٠ أزرار		٤٣ أم ٥٢		٧٧ أم ٦٧ أم ٥٧		١٢٥ ، ١٠٥ ، ١٦٩		$[\frac{٥}{٨}, \frac{١}{٨}]$	
	٤ حبّات فاصولياء أم ٦ حبات		🗣 Which is larger?		٩٩ ، ١٢٠ ، ٦٠		١٠٨أم ١٧٣		$[\frac{٣}{٧}, \frac{٢}{٧}]$		🗣 Which is the smallest?	
	🗣 Which is larger?		٦ أم ٢		🗣 Which is the smallest?		$\frac{١}{٤}$ أم $[\frac{١}{٢}]$		🗣 Arrange the following numbers from the largest to the smallest		$\frac{٣}{٦}$ ، $\frac{٤}{٦}$ ، $[\frac{٢}{٦}]$	
	٩ أم ٢		٢٥ أم ٣٦		٨٠ ، ٥٢ ، ٥٧		🗣 Arrange the following numbers from the largest to the smallest		١٠٤ , ١٣٦ , ١٧٢ , ١١٠ [١٠٤, ١١٠ , ١٣٦ , ١٧٢]		🗣 Arrange the following numbers from the smallest to the largest	
	٧ أم ٨		🗣 Which is the smallest?		🗣 Arrange the following numbers from the largest to the smallest		٤٨ , ٣٨ , ٦٧ [٣٨, ٤٨ , ٦٧]		٤٠٠ , ٩٩٠ , ١٥١٢ , ٩٠٩ [٤٠٠, ٩٠٩ , ٩٩٠ , ١٥١٢]		٩٩٠٠ , ٥١٠٦ , ٥٠١٦ , ٦٩٧٨ [٩٩٠٠, ٦٩٧٨ , ٥١٠٦ , ٥٠١٦]	
	٧ أم ١١		١٠٠ ، ٣٧ ، ٨٨		٧ , ٤٣ , ٣٤ [٧ , ٣٤ , ٤٣]		٩٨ , ١٠٧ , ١٧٠ , ٨٧ [٨٧, ٩٨ , ١٠٧ , ١٧٠]		🗣 arrange the following numbers from the smallest to the largest		٦٩٦ ,٨٥٢ ,٨٤٣ ,٩٦٧ [٦٩٦, ٨٤٣ , ٨٥٢ , ٩٦٧]	
	🗣 Arrange the following numbers from the smallest to the largest		🗣 Arrange the following numbers from the smallest to the largest		٩٠ , ٩٥ , ٨٩ [٨٩, ٩٠, ٩٥]		🗣 Arrange the following numbers from the smallest to the largest		٧٧٨ , ٥٦٤ , ٢٤٦ , ٧٢٣ [٧٧٨, ٧٢٣ , ٥٦٤ , ٢٤٦]		$\frac{١}{٧}, \frac{١}{٣}, \frac{١}{٥}$ $[\frac{١}{٣}, \frac{١}{٥}, \frac{١}{٧}]$	
	٧ , ٤ , ٩ [٩ , ٧ , ٤]		١١ , ٨ , ٣٥ [٣٥ , ١١ , ٨]		🗣 Arrange the following numbers from the smallest to the largest		٢٠٠ , ١٥٣ , ٧٨١ , ١٨٧ [٧٨١, ٢٠٠ , ١٨٧ , ١٥٣]		🗣 Which is smaller?		🗣 Arrange the following numbers from the largest to the smallest	
			🗣 Arrange the following numbers from the largest to the smallest		٢١ , ٩٠ , ١١ , ١٠١ [١٠١ , ٩٠ , ٢١ , ١١]				$[\frac{١}{٧}, \frac{١}{٣}]$		$\frac{١}{١٠}, \frac{٧}{٩}, \frac{٢}{٩}, \frac{٥}{٩}$ $[\frac{١}{١٠}, \frac{٢}{٩}, \frac{٥}{٩}, \frac{٧}{٩}]$	
			٣٩ ,٦٨ ,٥٦ [٥٦ , ٣٩ , ٦٨]									
	Total (6)		Total (6)		Total (6)		Total (6)		Total (6)		Total (6)	
			Total < 3: 1.1		Total < 3: 1.2		Total < 3: 2.1		Total < 3: 2.2		Total < 3: 3.1	
	Total > 4: 1.2		Total > 4: 2.1		Total > 4: 2.2		Total > 4: 3.1		Total > 4: 3.2			
	Stop and go to reading and writing numbers 1.1		Stop and go to reading and writing numbers 1.2		Stop and go to reading and writing numbers 2.1		Stop and go to reading and writing numbers 2.2		Stop and go to reading and writing numbers 3.1		Stop and go to reading and writing numbers 3.2	

Reading and writing numbers													
General instructions:		1) Clearly read the instructions to the student. 2) Do not read the numbers to the student.				3) Mark each item and complete the total for each set of questions. 4) Follow the instructions at the end of each section to move to next task to be assessed.							
KG		1.1		1.2		2.1		2.2		3.1		3.2	
✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮	
Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍
🗣 read the number		🗣 read the number		🗣 read the number		🗣 read the number		🗣 read the number		🗣 read the number		🗣 read the number	
٢		٦		١٦		٧٨		١٣٠		٤٠٧		٩٣٧	
٤		٣		١٨		١٠٩		٣٤٧		٦٨٥		٤٠٠١	
٥		٩		٦١		٢١٣		٥٩٦		٣٠١٩		٥٠١٠	
٧		١٢		١٩٩		خمسة عشر		$\frac{١}{٣}$		$\frac{٣}{٤}$		$\frac{١}{٩}$	
١١		١٧		اثنا عشر		🗣write in numbers		🗣write in numbers		$\frac{١}{٧}$		$\frac{٣}{٨}$	
🗣write in numbers		١٦		🗣write in numbers		سبع وستون		مائة وسبعة		🗣اكتب بالرموز		$\frac{٩}{١٠}$	
ستة		٥٤		تسعة عشر		مائة وخمس وسبعون		اربعمائة وست وثمانون		ثلاثمائة		🗣write in numbers	
		🗣write in numbers		اثنان وثمانون		مائتان وأربع وستون		سبعمائة وعشرون		تسعمائة وستّة		ثمانمائة	
		ثلاثة عشر		مائة وست وثلاثون		🗣write in words		🗣write in words		ألفان ومائتان واثني عشر		ستة آلاف وخمسة	
		سبع وعشرون		🗣write in words		١١١		٦٤		🗣write in words		أربع أخماس	
				٧٢		٥٧		١٢٧		١٩٧			
Total (6)		Total (9)		Total (9)		Total (9)		Total (9)		Total (9)		Total (9)	
		Total < 4: KG		Total < 4: 1.1		Total < 4: 1.2		Total < 4: 2.1		Total < 4: KG		Total < 5: 2.2	
Total > 4: 1.1		Total > 6: 1.2		Total > 6: 2.1		Total > 6: 2.2		Total > 6: 3.1		Total > 6:3.2			
Stop and go to counting (KG)		Stop and go to counting 1.1		Stop and go to counting 1.2		Stop and go to counting 2.1		Stop and go to counting 2.2		Stop and go to counting 3.1		Stop and go to counting 3.2	

Patterns															
General instructions:	1) Clearly read the instructions to the student. 2) Do not read the numbers to the student.					3) Mark each item and complete the total for each set of questions. 4) Follow the instructions at the end of each section to move to next task to be assessed.									
KG		1.1		1.2		2.1		2.2		3.1		3.2	
✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮		✓ 🕮	
Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍	Question	✍
						🗣 Complete the pattern with the missing number:		🗣 Complete the pattern with the missing number:		🗣 Complete the pattern with the missing number:		🗣 Complete the pattern with the missing number:	
						٤ , ٥ , ٦ , [٧]		١٢ , ١٤ , [١٦] , ١٨		٣١٠ , [٣١٥] , ٣٢٠ , ٣٢٥		٧٩٨ , ٧٩٩ , [٨٠٠] , ٨٠١	
						٣٠ , ٤٠ , [٥٠] , ٦٠		٦٥, ٥٥ , ٦٠ , [٥٠]		[٤٠٨] , ٤١٠ , ٤١٢ , ٤١٤		[٨٨٠] , ٩٠٠, ٩٢٠ , ٩٤٠	
						[٥٠] , ٤٠ , ٣٠ , ٢٠		[١٣٠] , ١٤٠ , ١٥٠ , ١٢٠		٢٥٠, [٣٠٠] , ٣٥٠, ٤٠٠		[٣١٥٠] , ٣٢٥٠ , ٣٣٥٠ , ٣٠٥٠	
						١٥ , [٢٠] , ٢٥ , ٣٠		٢٠٠, [٣٠٠] , ٤٠٠, ٥٠٠		[٤٤٠] , ٥٤٠ , ٦٤٠ , ٧٤٠		[٦٩٠٥] , ٧٠٠٠ , ٧٠٥٠ , ٧١٠٠	
						٦٨ , [٧٠] , ٧٢ , ٧٤		٥٠ , ١٠٠ , ١٥٠ , [٢٠٠]		١١٤٥ , [١١٥٥] , ١١٦٥ , ١١٣٥		[٢٦٠١٠] , ٢٦١١٠ , ٢٦٢١٠ , ٢٦٣١٠	
						١٠١ , [١٠٢] , ١٠٣ , ١٠٤		١٨٠ , ١٦٠ , [١٤٠] , ٢٠٠		[١٠٤٢٠] , ١٠٥٢٠ , ١٠٦٢٠ , ١٠٧٢٠		١٠٣ , ١٠٨ , [١١٣] , ١١٨	
						Total (6)		Total (6)		Total (6)		Total (6)	
								Total < 3: 1.1		Total < 3: 2.2		Total < 3: 3.1	
						Total > 4: 2.2		Total > 4: 3.1		Total > 4: 3.2			
						Stop and go to the summary		Stop and go to the summary		Stop and go to the summary		Stop and go to the summary	

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