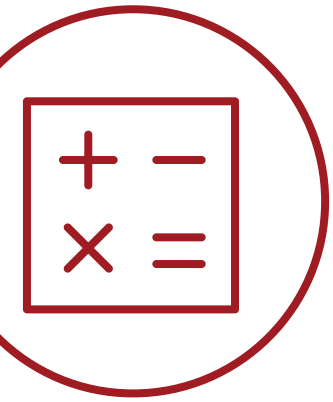
MONITORING TRENDS IN EDUCATIONAL GROWTH

CLASS 3 PROFICIENCY IN AFGHANISTAN 2015–16

OUTCOMES OF A LEARNING ASSESSMENT OF MATHEMATICAL AND READING LITERACY

Australian Council *for* Educational Research

ACER



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This report has been prepared for the
Ministry of Education, Islamic Republic of Afghanistan.
Website: http://moe.gov.af/

Ministry of Education
Islamic Republic of Afghanistan

First published 2018
by Australian Council for Educational Research Ltd
19 Prospect Hill Road, Camberwell, Victoria, 3124, Australia

www.acer.org

Cover design, text design and typesetting by ACER Creative Services

A catalogue record for this
book is available from the
National Library of Australia

ISBN: 978-1-74286-500-3 (ebook)

Acknowledgements

The MTEG 2015–16 assessment of Class 3 students in Afghanistan was a collaboration between the Centre for Global Education Monitoring at the Australian Council for Educational Research (ACER-GEM) and the Ministry of Education, Afghanistan. The key staff involved are acknowledged here.

Prof. Ustad Naeem Baheen, Director General, General Education, Ministry of Education
Dr. Amir Mohammad, Deputy and Active Director of EQUIP
Special thanks are also given to His Excellency, Dr Mohammad Ibrahim Shinwari, Deputy Minister and the Acting Minister of Education for his strong support for this project.

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Naqeebullah Tahsin (Cultural and linguistic consultation, audio narration – Pashto and Dari)
Stephanie Templeton (Project administration)
Ross Turner (Reporting)
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Matt Wurm (IT services)
Maurice Walker (ACER project director and reporting)

Thanks are also extended to the many other individuals involved, including the ACER administration team, the school staff in Afghanistan, those who contributed to the many aspects of materials development and delivery, and the students who participated.

The critical support of sponsors is also acknowledged, in particular World Bank staff and associates. In particular, special thanks to Nathalie Lahire, Abdul Hai Sofizada and Matiullah Noori for their support.

The authors would like to acknowledge the use of work from the Class 6 reports, in particular, by Tom Lumley, Juliette Mendelovits, Rachel Stanyon, Ross Turner and Maurice Walker, originally published in Class 6 Proficiency in Afghanistan 2013 (Lumley, Mendelovits, Stanyon, Turner & Walker, 2015).

Contents

Overview

Background

In 2012, the Ministry of Education, Afghanistan, engaged the Australian Council for Educational Research (ACER) as a partner to support the development of a national learning assessment program in Afghanistan. To achieve this goal, the Learning Assessment Unit of the Ministry of Education and ACER collaborated to design and implement the Monitoring Trends in Educational Growth (MTEG) program in Afghanistan.

MTEG is designed as a long-term monitoring program with one focus on trends in achievement outcomes in single classes over time, and another focus on the growth of achievement in cohorts throughout the school cycle, from Class 3 through to Class 9.

The Afghanistan Ministry of Education's curriculum goals speak of students' learning skills such as 'reading and writing, using numbers', and of utilising those skills to support 'thinking, reasoning, study, research, diagnosis and innovation in academic, literary, cultural and technical contexts' and in the 'solving and identification [of] individual and social problems' (Afghanistan Ministry of Education, 1390 [2011], pp. 116-117). These goals are reflected in MTEG's literacy approach to the assessment of mathematics, reading and writing. The term literacy denotes the ability to apply knowledge, skills and understanding across a range of contexts, both within school and in extra-curricular settings. Rather than limiting its focus to set topics laid out in a curriculum, in MTEG the domains of mathematics, reading and writing are assessed through tasks that require *authentic use of knowledge* (Turner, 2014). Afghanistan is undergoing a curriculum reform process, and as outlined in Afghanistan's National Education Strategic Plan (NESP) III 2017-2021 (Afghanistan Ministry of Education, 2016), the curriculum reform will emphasise the application of knowledge and skills in the real world. The literacy orientation underpins an approach that is both curricular and cross-curricular. The assumptions behind a literacy approach to assessment are explained in more detail in An Assessment Framework for Monitoring Trends in Educational Growth (ACER 2016).

The first MTEG assessment took place in 2013 with the assessment of Class 6 students. The second MTEG assessment occurred in 2015–16 with the assessment of Class 3 students. In this report, the assessment results of the Class 3 students measured in 2015–16 are discussed, as well as the changes in achievement between Class 3 and Class 6 students.

The MTEG program was designed to assess Classes 3, 6 and 9 on a rotational basis in order to provide information on changes in class achievement over time and growth in achievement between classes.[1] Therefore, should future MTEG cycles occur, information can be gathered on trends in Class 3 achievement over time and growth in achievement between Classes 3 to 9.

1 For information about the original proposed MTEG schedule, see *Class 6 Proficiency in Afghanistan 2013* (Lumley et al., 2015).

Exhibit 1: Educational goals of the Afghanistan Education Curriculum

EDUCATIONAL GOAL 1

Acquiring and strengthening the learning skills [of] listening, speaking, reading and writing, using numbers and calligraphy in national and foreign languages.

EDUCATIONAL GOAL 4

Promoting and strengthening the abilities of thinking, reasoning, study, research, diagnosis and innovation in academic, literary, cultural and technical contexts.

EDUCATIONAL GOAL 5

Gaining skills for solving and identification [of] individual and social problems.

(Afghanistan Ministry of Education, 1390 [2011], pp. 30)

Terminology and conventions used in this report

Reporting of student data

The report uses 'Class 3' students as shorthand for the MTEG Afghanistan 2015–16 target population. The target population is defined as Class 3 students (taught in Dari or Pashto) from government schools in 15 provinces in Afghanistan.

This report also includes references to 'Class 6' students. 'Class 6' students is used as shorthand for the MTEG Afghanistan 2013 target population. The target population is defined as Class 6 students (taught in Dari or Pashto) from government schools in 13 provinces in Afghanistan.

The figures in this report are estimates that apply to the Class 3 and Class 6 populations. To obtain these estimates, the sample data are weighted to the estimated number of students in the Class 3 and Class 6 population, respectively.

Rounding

All statistics, including their totals and differences, are rounded for reporting purposes. Because of rounding, some figures in some tables may appear inconsistent. Where a value of 0 is reported it means that the value is less than 0.5.

Statistical significance

Statistical significance shows that the differences identified are likely to be reflected in the population, rather than being the result of the random nature of the data. The 95% confidence level is used throughout this report to compute confidence intervals and statistical significance.

Differences which are statistically significant and positive are identified by a triangle '△'; the differences that are statistically significant and negative are identified by an inverted triangle '▽'; and the differences that are not statistically significant are identified by a dash '–'.

Standard errors have been calculated and used when discussing whether differences are statistically significant. However, as was the case with the Class 6 reports, standard errors are not included within this report.

Acronyms

ACER	Australian Council for Educational Research
EMIS	Education Management Information System
NESP	National Education Strategic Plan
NAPLAN	National Assessment Program – Literacy and Numeracy
MTEG	Monitoring Trends in Educational Growth
PIRLS	Progress in International Reading Literacy Study
SDG	Sustainable Development Goal
TIMSS	Trends in International Mathematics and Science Study

Key Points for MTEG Afghanistan 2015–16

Purpose

- MTEG is designed as a long-term monitoring program.
- One focus of MTEG is on trends in achievement outcomes in single classes over time.
- Another focus is on the growth of achievement in cohorts throughout the school cycle, from Class 3 through to Class 9.

Methods

- In total, 179 schools and 4 936 students participated in the assessment, representing 658 975 students estimated to be in the Class 3 population across the 15 provinces.
- Each participating student undertook a one hour test and answered a short background questionnaire.
- The test contained tasks relating to mathematical and reading literacy.
- Students competed the test on a tablet with one tablet per student. Audio support through the tablet was provided for some tasks.
- Each student answered a short questionnaire orally. This contained questions about the student's age, language spoken at home and resources for school and in the home.
- In addition, the principals of participating schools filled in a school questionnaire including questions about the principal, the teachers, and the school's facilities and resources. All 179 school principals completed questionnaires.

Publications and database

- The cognitive results from the 2015–16 Class 3 assessment in mathematical and reading literacy are the main topic of this report (Class 3 proficiency). This report also describes the growth in achievement between Class 3 and Class 6 students.
- The full Class 6 results are available in three short topical reports on:
  - Class 6 proficiency
  - Class 6 girls and boys
  - Class 6 school factors
- The MTEG reports and databases for Class 3 and Class 6 are available at this address: https://www.acer.org/gem/key-areas/system-strengthening/mteg

The sample

Schools from 15 provinces in Afghanistan participated in the Class 3 assessment (see Exhibit 2). The provinces included are broadly representative of the five main regions of Afghanistan: East, West, Central, North and South. The 15 provinces are Badakhshan, Balkh, Bamyan, Farah, Faryab, Helmand, Herat, Kabul Province, Kabul City, Kandahar, Khost, Kunduz, Nangarhar, Paktia, and Parwan.

Using statistical methods[2], schools from these provinces were randomly sampled to participate in the study. A random sample of 179 schools was selected, which included schools from hot and cold regions.

In Afghanistan, the academic year is different for schools in hot regions compared to schools in cold regions. From each participating school 15 students were sampled from each of two sections[3], meaning up to 30 students from each school participated. Sections of Class 4 students were selected to be administered the assessment from cold region schools, and sections of Class 3 students were selected to be administered the assessment from hot region schools. As the assessment was scheduled at the beginning of the school year in cold regions, Class 4 students were selected to represent Class 3 students in cold regions. This is because students at the beginning of Class 4 in cold regions would be expected to be at a more similar achievement level as students at the end of Class 3 in hot regions, than would students at the beginning of Class 3. Therefore, throughout this report 'Class 3 students' is used to refer to the Class 3 population, represented by the combined Class 3 and Class 4 samples.

Girls made up about 48% of the sample and boys 52%. The proportion of participating students tested in Dari was 67% with 33% of students tested in Pashto. These figures closely match the estimates of girls/boys and Dari/Pashto instructed students in the Class 3 population.

The Class 3 sample had similar characteristics to the Class 6 sample. However, some differences are noted below.

For both the Class 3 and Class 6 assessments, the following 13 provinces were included in the sample: Balkh, Bamyan, Faryab, Helmand, Herat, Kabul Province, Kabul City, Kandahar, Khost, Kunduz, Nangarhar, Paktia, and Parwan. However, for Class 3, two additional provinces – Badakhshan and Farah – were added in order to increase the scope of the assessment. The achievement levels of Class 3 students were calculated for all 15 provinces and compared to the achievement levels of Class 3 students in 13 provinces (excluding Badakhshan and Farah). The results indicated that the performance of students in Badakhshan and Farah did not have a large impact on the overall achievement levels. The results from all 15 provinces in the Class 3 assessment have therefore been used to compare the achievement levels of Class 6 students from 13 provinces.[4]

In Class 6, the ratio of girls to boys in the sample was lower than in Class 3. In Class 6, girls made up about 42% of the sample and boys 58%. This closely matched the estimated proportion in the population in Class 6 across Afghanistan.

In Class 6, the proportion of participating students tested in Dari was 54% with 46% of students tested in Pashto. However, the Class 6 data were weighted to accurately represent Class 6 population estimates, where 70% of Class 6 students are instructed in Dari and 30% are instructed in Pashto.

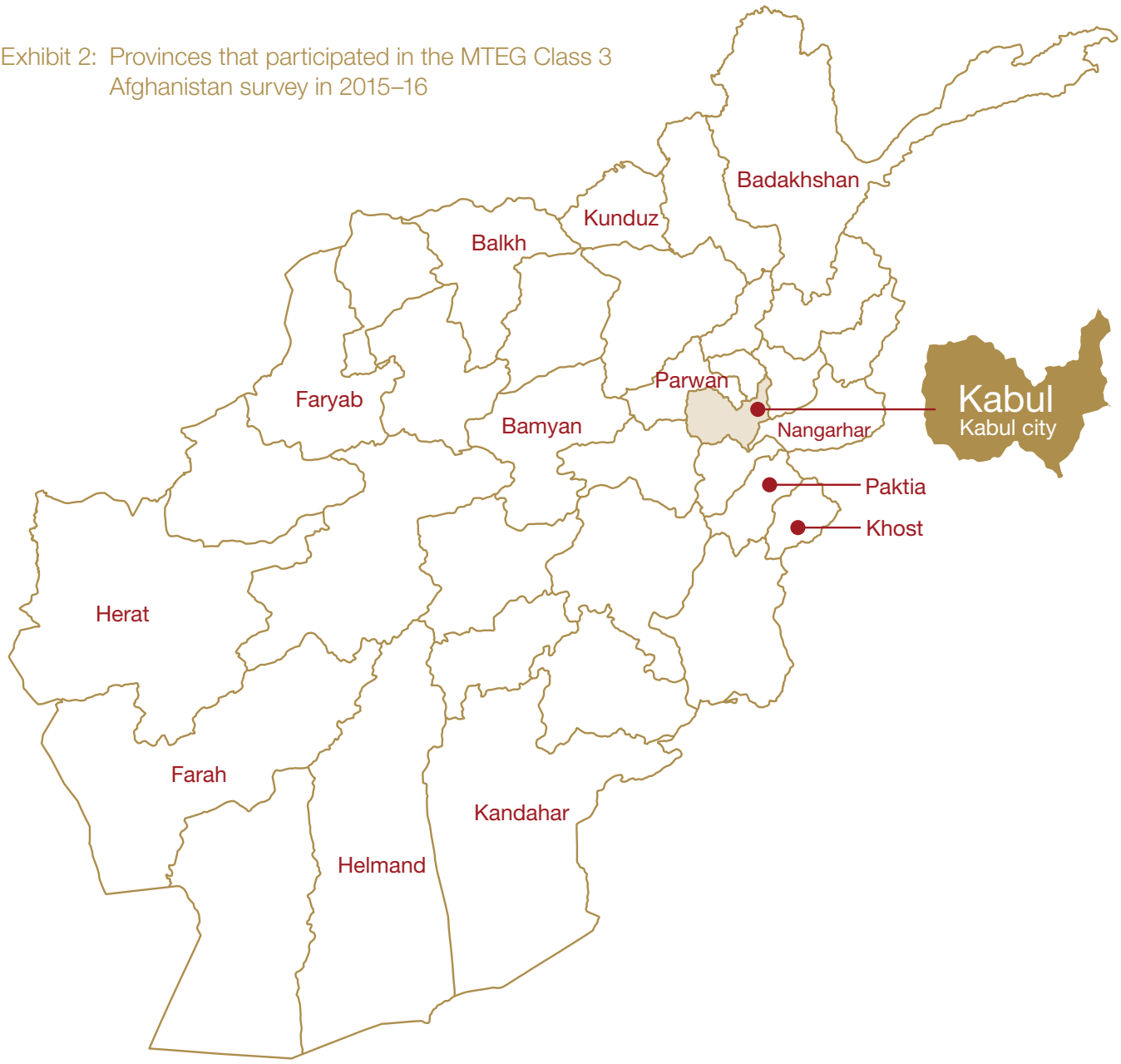
2 The sample frame was based on schools with Class 3 and Class 4 students listed on the Ministry of Education's Education Management Information System (EMIS).

3 Where schools contained only one section of students in the target class, one section was sampled with up to 30 students participating.

4 The results are aggregated for all provinces as the sample was not designed in order to provide results by province.

The results of the Class 3 assessments are reported on the same mathematics and reading proficiency scales as the Class 6 assessments. The study design enables the achievement levels of Class 3 and Class 6 students estimated from the assessments to be directly compared.

Exhibit 2: Provinces that participated in the MTEG Class 3 Afghanistan survey in 2015–16



Introduction

This report presents the results of an assessment of mathematical and reading literacy of Class 3 students in 15 provinces in Afghanistan. The data were collected between late 2015 and mid-2016. The report also describes the growth in mathematical and reading literacy between Class 3 and Class 6. The Class 6 data were collected from the 2013 assessment in 13 provinces in Afghanistan.

The purpose of MTEG is to provide information to education policymakers on the quality of education outcomes in Afghanistan. In addition, MTEG will inform educational practitioners by clearly demonstrating what Class 3 students can and cannot do in an assessment situation and how this compares with Class 6 students.

As well as providing information about the educational outcomes of Class 3 students overall, this report also provides information for different sub-groups of students, including the outcomes for: girls and boys; for students attending school in urban compared to non-urban areas[5]; and for students who attend schools teaching in Pashto and Dari.

One of the policy areas that MTEG aims to inform is gender equality. It is known that fewer girls attend school than boys and that the rate of illiteracy among the female population is higher (Central Statistics Organization, 2014). As outlined in the NESP III, redressing this imbalance is a priority for Afghanistan (Afghanistan Ministry of Education, 2016). Addressing gender inequalities and enhancing educational outcomes for all learners are also included within the United Nations Sustainable Development Goals (SDGs). Despite data having been collected on school attendance and literacy levels in the population, little is known about the quality of educational outcomes. This report will contribute to the discussion on gender disparity by reporting on the proficiency levels of girls and boys in the domains of mathematical and reading literacy.

In the future, the Class 3 MTEG data collected from school principals and students on background characteristics that may interact with achievement could also be further investigated. For example, the results from the MTEG Class 6 assessment showed that the differences in achievement between urban and non-urban schools could largely be explained by the resources available to both students and schools. For more about the effect of socioeconomic status on the Class 6 findings, see *Class 6 School Factors in Afghanistan 2013* (Friedman, Robertson, Templeton & Walker, 2016).

The results of both the Class 3 and Class 6 assessments are reported on 'described proficiency scales'.[6] For each domain, proficiency can be described from early stages of learning to more sophisticated skills and understanding. For ease of interpretation, each continuous scale is divided into 'bands' or 'levels', making it possible to describe the knowledge, skills and understanding that students demonstrate at a given region of the scale for mathematical and reading literacy.

In Class 6, three domains were assessed – mathematical, reading and writing literacy. However, as the Class 3 assessment was administered on tablets[7] and in order to minimise the testing time for younger students, writing literacy was excluded in the Class 3 assessment.

5 Information about whether students attended a school in an urban or non-urban area was obtained from the school questionnaire. This information was then matched to the student data.

6 Described proficiency scales are also referred to as 'learning metrics' in education literature.

7 The Class 6 assessment was delivered as a paper-based assessment.

Therefore, writing literacy is not discussed within this report.[8] See Appendix A for more information about the tablet-based assessment. An overview of the Class 3 results for mathematical and reading literacy is provided below.

Overview of mathematical literacy achievement

Based on the results of the assessment, the proportion of the Class 3 population performing at each proficiency level for mathematical literacy is shown in Exhibit 3.

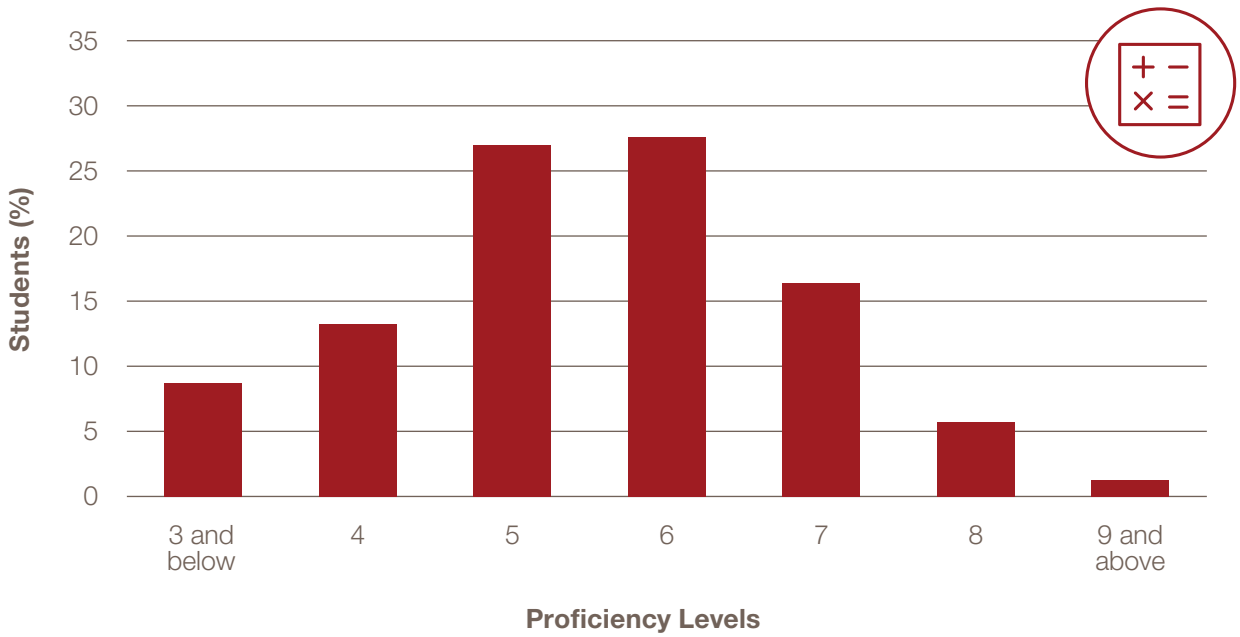
The data show that more than half of students (proficiency Levels 6-9 and above) in Class 3 are able to solve addition and subtraction problems involving numbers up to 20 using support materials or mental strategies. They understand that fractional parts of an object must be equal in size. They also have a good understanding of place value to support the development of strategies for use in calculations involving multi-digit numbers. They can tell time to the hour on an analogue clock, classify two-dimensional shapes and retrieve information from a simple column graph or tally chart.

About 7% of Class 3 students – those at proficiency Levels 8-9 and above – are able to understand a mathematical problem that is presented in a familiar context using words and pictures, and to devise and carry out the calculations needed to solve the problem. These students can apply all four operations[9] effectively with numbers up to 1000. They can carry out calculations involving time shown on an analogue clock and data presented in simple graphs and tally charts. They are able to name common three-dimensional shapes and their features, and to use an appropriate tool to measure the area, volume and mass of objects.

8 The Class 6 achievement outcomes in writing literacy are discussed in *Class 6 Proficiency in Afghanistan 2013* (Lumley, et al., 2015).

9 Addition, subtraction, multiplication and division

Exhibit 3: Distribution of Class 3 mathematical proficiency



The results show that 9% of students in Class 3 were in proficiency Level 3 and below. These students are at the earlier stages of developing their mathematical skills. They are able to count to 10, and understand that the last number counted represents the total number. They can sort familiar objects and use informal language to compare and describe the attributes of objects, such as 'tallest', 'longest' and 'more'. However, they are not yet able to reliably carry out simple arithmetic processes of addition and subtraction with numbers up to 10.

Using TIMSS – a major international study of mathematics and numeracy at Class 4 – some interesting comparisons can be drawn with the results from the Class 3 MTEG assessment. Exhibit 4 shows data from the previous two cycles of TIMSS assessments for the neighbouring countries of Islamic Republic of Iran, Azerbaijan and Kazakhstan (Mullis, Martin, Foy & Arora, 2012a; Mullis, Martin, Foy & Hooper, 2016). As can be seen in Exhibit 4, in Iran 64% of students in Class 4 in 2011 and 65% in 2016 could add and subtract whole numbers, multiply by one-digit numbers and solve simple word problems. The proportion of Class 4 students with these skills was similar in Azerbaijan but much higher in Kazakhstan.

The data from MTEG demonstrate that about half of Class 3 students (students in Level 6 and above) in Afghanistan are able to add and subtract whole numbers, multiply by one-digit numbers and solve simple word problems. These are tasks that around two-thirds of Class 4 students in Iran and Azerbaijan, and almost all students in Kazakhstan have the skills to perform.

Exhibit 4: Percentage of Class 4 students with the mathematics skills required to add and subtract whole numbers, multiply by one-digit numbers and to solve simple word problems (TIMSS 2011 and 2015 results)

Year / Country	Iran	Kazakhstan	Azerbaijan
2011	64%	88%	68%
2015	65%	96%	Did not participate

Overview of reading literacy achievement

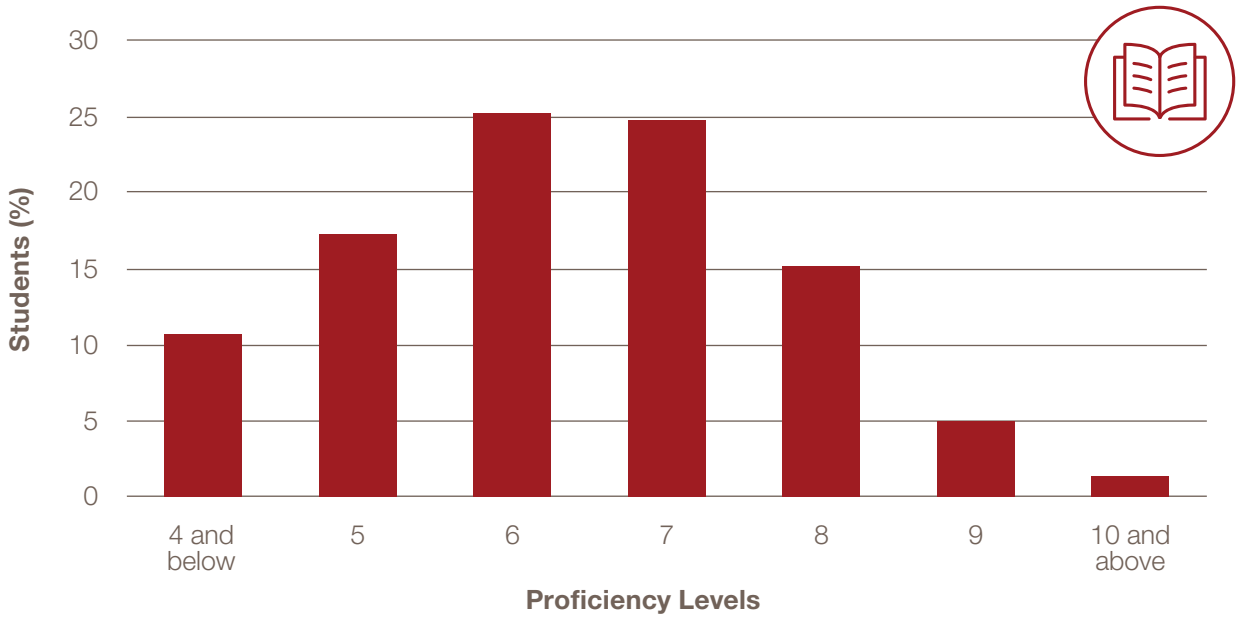
The proportion of the Class 3 population performing at each proficiency level for reading literacy is shown in Exhibit 5.

In reading literacy, 89% of students (proficiency Levels 5-10 and above) in Class 3 are likely to be able to decode letters of the alphabet into sounds and simple words and match pictures to words. The ability to demonstrate reading and basic comprehension of clearly stated information in simple sentences without audio support starts to appear at the lower end of Level 6. Seventy-two per cent of students in Class 3 were at Levels 6-10 and above.

About 22% of Class 3 students are at proficiency Levels 8-10 and above. These students can incorporate higher cognitive skills in their methods of making meaning from texts, whether they are difficult aural texts of more straightforward reading texts. Examples of these higher skills are the ability to link pieces of information across sentences to interpret an action or outcome in a narrative or collect evidence in an informative text and recognise an inference embedded within a text and understand its impact on the plot or behaviour of characters in a narrative text.

Around 11% of students were in proficiency Level 4 and below. Students at this level are likely to be at a pre-literacy stage so are yet unable to match their oral skills with written letters or words. An example of the types of skills that students at Level 4 could be expected to have would be the ability to match oral-based words and phrases with pictures. This would demonstrate comprehension and vocabulary at the oral language stage.

Exhibit 5: Distribution of Class 3 reading proficiency



At the time of writing, there is little known about the performance of Class 3 students studying in countries neighbouring Afghanistan. However, using PIRLS – a major international study of reading literacy at Class 4 – some interesting comparisons can be drawn. Exhibit 6 shows data from the previous two cycles of PIRLS assessments for the neighbouring countries of the Islamic Republic of Iran, Azerbaijan and Kazakhstan (Mullis, Martin, Foy & Drucker, 2012b; Mullis, Martin, Foy & Hooper, 2017). As can be seen in Exhibit 6, in Iran 76% of students in Class 4 in 2011 and 65% in 2016 could retrieve directly stated information from a text. The proportion of Class 4 students with these skills was higher in Kazakhstan and Azerbaijan.

The data from MTEG show that around half of Class 3 students in Afghanistan (students in Level 7 and above) can perform this skill of retrieving directly stated information from a text, a skill that most students in Kazakhstan and Azerbaijan can perform, and around three-quarters of students in Iran can perform at Class 4. While many Class 3 students in Afghanistan are performing below the level of Class 4 students in these neighbouring countries, it is promising that a significant number of students in Afghanistan are able to demonstrate this fundamental reading skill.

Exhibit 6: Percentage of Class 4 students with the literacy skill of 'Retrieving directly stated information from a text' (PIRLS 2011 and 2016 results)

Year / Country	Iran	Kazakhstan	Azerbaijan
2011	76%	Did not participate	82%
2016	65%	98%	81%

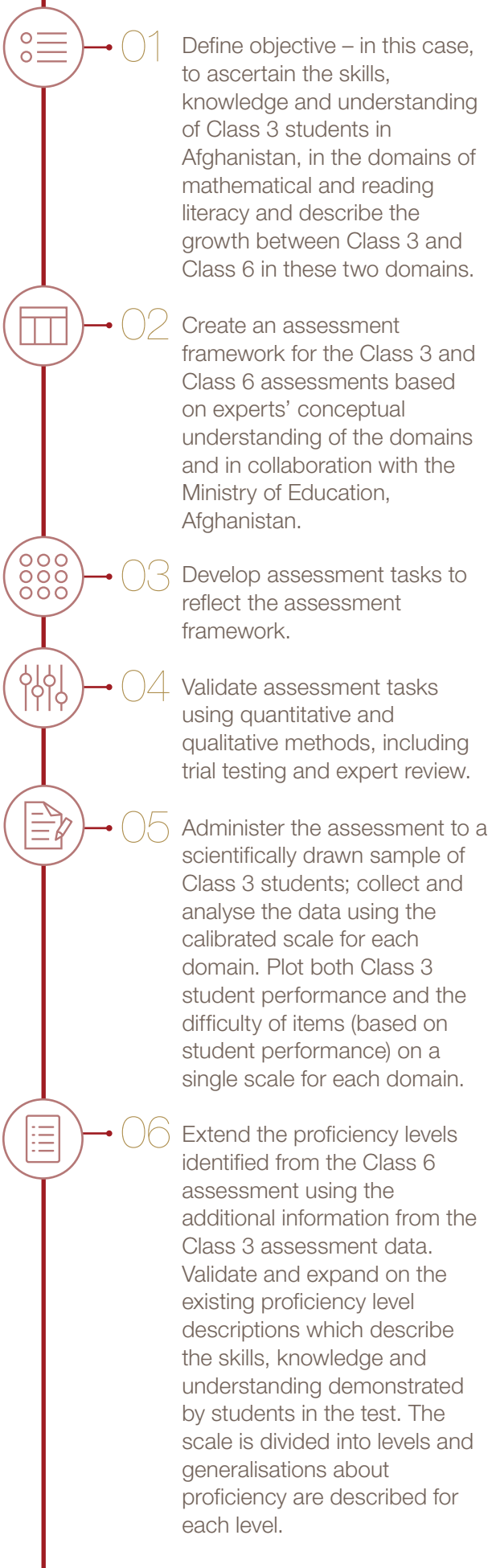
Defining proficiency

The purpose of MTEG Afghanistan is to provide a profile of the skills, knowledge and understanding of the Class 3 cohort, including gender and location (urban versus non-urban), rather than to provide results for individual students, sections or schools. The data can be used to inform policy debates by providing information about contextual factors that influence achievement and inform teaching practice by illustrating what students can and cannot do. The data can also be used to reveal trends in educational growth from one class to another, as well as measuring changes within one class level over time.

Students' performance on the cognitive items can be used to describe the skills, knowledge and understanding of Class 3 students, as demonstrated by their performance on the assessment instruments. These descriptions are created through a process that starts with an assessment framework which articulates the Afghanistan curriculum goals through a literacy orientation. Next, literacy-based assessment tasks are designed to reflect these goals, and the tasks are administered to students. After analysis of the results, scales are created on which students' levels of proficiency are located. These proficiency levels are then described with reference to the skills, knowledge and understanding required to complete items at each level.

The proficiency scales were initially developed using the Class 6 assessment results. The scales covered a wide range of proficiencies, from early stages of learning to quite sophisticated skills and understanding. The scales were developed to allow for lower levels of proficiency to be described, as it was expected that many Class 3 students would perform below the lowest described levels on the proficiency scales developed from the Class 6 assessment.

Exhibit 7: Assessment and reporting process



A study that enabled the Class 3 and Class 6 results to be linked was conducted in 2015–16.[10] This enabled the Class 3 results to be reported on the same mathematical literacy and reading literacy scales as the Class 6 results, meaning that information on growth between the classes can be described. That is, the mathematical and reading literacy of students, or groups of students, can then be described by their relative location on these scales.

In the following section, the assessment and reporting process will be briefly outlined (see Exhibit 7) and then the key processes are further explained.

Using this method, statements can be made about the percentage of students at various levels of proficiency on continua of learning in mathematical and reading literacy.

A hypothetical example of a described proficiency scale for mathematics is shown in Exhibit 8.

Development of the assessment framework

The development of the MTEG described proficiency scales began with the creation of an assessment framework. One of the main purposes of an assessment framework is to guide test development, ensuring that the assessment instrument covers the domain, reflecting key educational goals of the Afghanistan Education Curriculum. A second important purpose is to ensure that there is an articulated plan for the assessment. This provides stability over time or, where change is desired, it can be made explicit and implemented deliberately.

10 A link study was used to place the Class 3 items and students on the same scale that was developed for the Class 6 assessment. An additional sample of students from Class 4 and Class 5 was selected for the link study. A test that consisted of a subset of items used in the Class 6 assessment and a subset of items used in the Class 3 assessment was administered to the link study students. The purpose of the link study was to report the Class 3 and Class 6 results on the same scale. The link study was not used to obtain information on the proficiency levels of the link study students.

The MTEG assessment framework for each domain lays out a definition of the domain, its key characteristics, and a prescribed balance of those elements that are used as a blueprint for constructing the instruments. Content, processes and contexts are described for each of the literacy domains. These are based on what experts in the field take to be the essential characteristics of the domain and are consistent with the educational goals expressed in the Afghanistan Education Curriculum, and on what the experts understand increasing proficiency in the domain to mean. See Appendix B for a table of the content, process and context categories defined for each of the domains in Class 3.

Development of assessment tasks to reflect the framework

Once the assessment framework had been drafted, assessment tasks were developed to give substance to the framework, with each assessment task explicitly designed to represent one of the defined content, process and context categories. For example, in the assessment framework for Class 3 reading, the two levels of reading literacy are addressed:

- the ‘ability to read’ by recognising letters and sounds and decoding them into words and sentences. For example, the framework has identified ‘letter sounds’ as a key aspect of decoding, ‘at the end of a word’ as a key structure and ‘unfamiliar’ as a key context. A decoding task might measure whether a student could identify the last sound of a likely-to-be unfamiliar word.
- the ‘ability to read’ words and sentences to make meaning and aid comprehension. For example, the framework has identified ‘interpret’ as a key reading comprehension process, ‘narrative texts’ as a key text type, and ‘familiar’ as a key context for reading. A reading task might measure whether a student could interpret information in a short narrative text set in a familiar context (see Exhibit 25 Hasti and the Birds Q1).

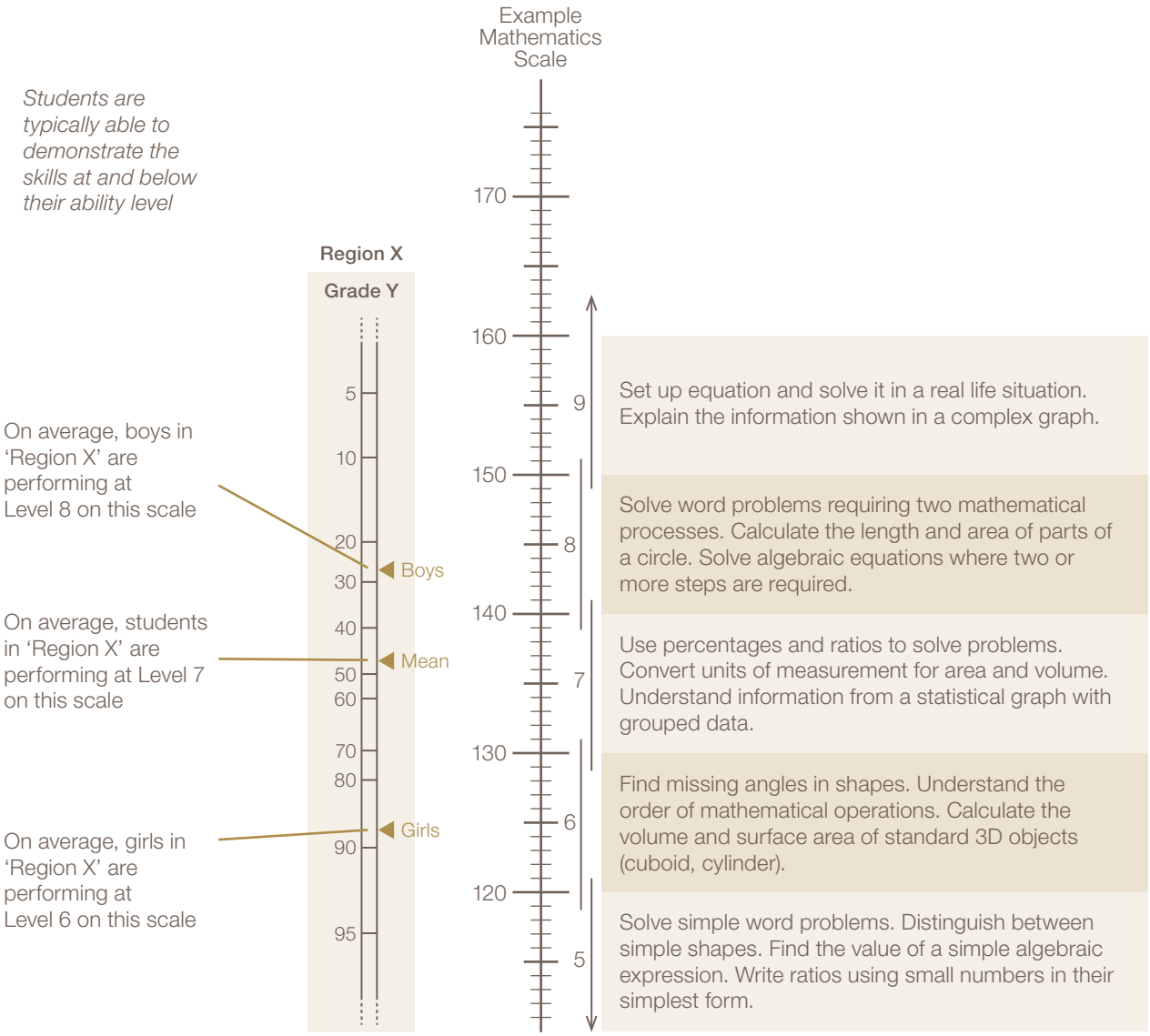
Exhibit 8: Example proficiency scale

The central elements of the described proficiency scale are the numerical scale, and the descriptions of the levels of the scale in meaningful substantive terms. The various locations on this scale are proficiency scores.

Against the described proficiency scale in Exhibit 8, the learning outcomes of one region ('Region X') at 'Grade Y' are reported. A range of indicators is shown: the distribution of performance; the mean proficiency scores for all children; and the mean proficiency scores for girls and boys. Differences between other subgroups could also be highlighted.

Described proficiency scales also allow for the comparison of different class levels and regions on the one scale if such data become available.

Matching the mean proficiency scores of the different groups to the proficiency descriptions of the levels gives an understanding of the skills and abilities of these groups.



The tasks in the instrument designed for each domain were developed to represent, in aggregate, what the framework had outlined.

An important step in the development of the tasks was to describe the cognitive demand of each task in some detail. This meant paying particular attention to features known from research to make items more or less difficult. In mathematics, for example, the difficulty of a task might be increased because the mathematical strategy that the student needs to use to solve the task is not explicitly provided in the question, and must be devised, implemented and monitored by the student in order to solve the problem. This characteristic of the task would be included in the description of the cognitive demand for that task.

Collecting and analysing assessment data

Once the tasks have been designed and validated (using a variety of quantitative and qualitative methods, such as trial testing and expert review), they are administered to a sample of students – in the case of the MTEG Afghanistan project, to Class 3 students in 15 provinces in 2015–16.

When the assessment data have been collected, the items and students are calibrated on a single scale for each domain:

1. The position on the scale at which a task appears is determined by how difficult the task was for the group of students who did that task.
2. The position on the scale at which a student appears is determined by how successful the student was in completing all the tasks that he or she did in the assessment.

The Class 3 achievement levels in mathematical and reading literacy are reported on the same mathematical and reading literacy scales as for Class 6.

Reporting student proficiency on a described proficiency scale

The scale for each domain assumes there is an underlying trait – mathematical or reading literacy – which can be thought of as an attribute possessed to differing degrees by different students. Similarly, each task (or question) in the assessment can be thought of as demanding the activation of a certain degree of this trait. The underlying trait can be represented as a line or scale, showing at the same time the increasing presence of the attribute and the increasing extent to which tasks call for the attribute.

In associating students with items on the scale, we make probabilistic statements, for example that we expect students at a certain location on the scale to have a particular probability of correctly answering items at or near that same location. Similarly, we expect that students would have a higher probability of correctly answering questions below that location (relatively easy items), and a lower probability of correctly answering questions higher on the scale (relatively difficult items). In other words, the more difficult an item is, the more ability a student needs to answer it; and the less proficient a student is in the relevant domain, the less likely it is that he or she is able to answer more difficult questions – that is, those that demand more of the relevant attribute.

In this sense, the proficiency scale encapsulates descriptive and probabilistic statements about the expected performance of groups of students in each domain, rather than specific predictions about individuals.

Exhibit 9: Summary of described proficiency scale development

The proficiency scale and its level descriptions were initially developed during the Class 6 assessment by following these steps:

- describing the demand of each mathematics and reading task in some detail, paying particular attention to features of mathematical or reading tasks known from research to be significant drivers of item demand and ability
- using the empirical difficulty of all items arising from the administration of the MTEG assessment among Afghanistan's sampled Class 6 students to place all items and score points in order from most difficult to least difficult, as determined by actual student performance
- identifying a suitable band-width for all levels and possible cut-points between levels
- using the descriptions of task demand for items or score points near to each other (that is, lying in the same level on the scale) to identify common patterns and elements that reflect key growth steps in different regions of the scale.

The proficiency scale and its descriptions were then expanded on during the Class 3 assessment by following these steps:

- using the empirical difficulty of all items arising from the administration of the MTEG assessment among Afghanistan's sampled Class 3 students to place all items and score points in order from most difficult to least difficult, as determined by actual student performance
- placing the Class 3 items and score points on the same Class 6 proficiency scale. The mathematics and reading proficiency scale were extended at the lower levels to include the Class 3 results
- using the information gathered from the Class 3 tasks to expand on the existing descriptions of the levels, particularly at the lower levels of the scale where further information had been gathered from the Class 3 assessment.

Dividing the scale into levels

Although the scales are continuous, for ease of interpretation they are divided into bands – Level 3 and Level 4 and so on. In MTEG, students are said to be at a particular level on the proficiency scale if their performance indicates that they would be likely to get at least half of the items correct on a test composed of items spread uniformly across that level.

A student right at the bottom of a mathematics or reading level would be expected to succeed on approximately half of the items on a test comprising items within that level. Students at higher points on the scale within that level would be expected to get a progressively higher proportion of such items correct, until at the top of the level they would be expected to succeed at between 70% and 80% of those items (depending exactly on how wide the band width is set), but not yet half of the items in the next higher band.

Using the scale to describe what students know, understand and can do

The previous section outlined how the scales are constructed mathematically. Once this has been done, a position on the scale can be identified in terms of the characteristics of tasks at that level, and in terms of the skills and knowledge of students in mathematical or reading literacy at that level. This is done by inspecting the tasks located within the defined levels of the scale. Since every task in the test has been described in terms of its cognitive demand, the next step is to identify common elements among the task descriptions at a given level. Finally, these elements are synthesised to yield a general account of proficiency at each level: a 'described level'.

The Class 6 proficiency scales started their descriptions around 'Level 5', allowing space for lower levels of proficiency to be described and linked to the described proficiency scales. During the Class 3 assessment, proficiency descriptions were added for the lower proficiency levels and some of the existing descriptions were revised in light of the additional information provided through the Class 3 tasks.

Locating Class 3 proficiency within a continuum of learning

Mathematical and reading literacy are conceived of as continua of learning – beginning from early stages of schooling and developing across the class levels and beyond school education. In any setting, students in a given class demonstrate a range of skills, knowledge and understanding, and in any large-scale assessment, such as a national or international assessment, the range within a class level is likely to be very wide: there is almost inevitably overlap between proficiency of students in different classes. The link between the Class 3 and Class 6 proficiency scales enabled conclusions to be drawn about the amount of overlap between these groups of students. As is discussed later in this report, students performing at the mid to higher levels in Class 3 demonstrate a similar level of proficiency to students at the lower levels in Class 6. In the future, it would also be possible to extend the proficiency scales and to map student proficiencies from Class 3 through to Class 9 on a single scale for each domain.

Class 3 proficiency in MTEG Afghanistan 2015–16

A wide range of abilities is demonstrated by the Class 3 population in mathematical and reading literacy.

About half of Class 3 students are demonstrating 'basic proficiencies' in mathematics such as solving addition and subtraction problems involving numbers up to 20. The remaining Class 3 students have not yet demonstrated these 'basic proficiencies' in mathematics.

About half of Class 3 students are demonstrating 'basic proficiencies' in reading such as locating directly stated information from both written and aural texts. The remaining Class 3 students have not yet demonstrated these 'basic proficiencies' in reading.

Scales were developed for reporting outcomes of the Class 6 assessments of reading and mathematics in 2013. As previously discussed, these scales were developed in a way to accommodate future MTEG assessments. This includes being able to report other class levels on the same proficiency scale so that learning progress can be identified and monitored between different classes.

With the addition of the Class 3 cohort to the Afghanistan MTEG assessment in 2015–16, the reporting scale used for Class 6 students was extended to cover the earlier learning levels. In other words, learning outcomes measured for Class 3 students were reported on the same scale as had been used for the Class 6 students, with new descriptions added to the lower parts of the scale to accommodate the Class 3 students.

The proficiency scales presented on the next few pages are based on the results of the assessment of mathematical literacy and reading literacy administered to Class 3 students in MTEG Afghanistan in 2015–16.

Each domain is represented by two displays:

- First, a described proficiency scale is presented, showing the percentage of Class 3 students who performed at each of several levels associated with MTEG scores, and briefly describing the kinds of skills, knowledge and understanding that can be expected from students located at that level.
- Second, for each domain there is an illustrated scale, showing how example items from the MTEG Afghanistan instruments for Class 3 relate to the MTEG scores and levels.

Following these nutshell presentations, there is a more detailed description of what kinds of proficiencies are demonstrated by students at each level in the relevant domain and illustrative example tasks drawn from the MTEG Afghanistan assessment are provided.

The MTEG scale can be expressed numerically. For Class 6 in Afghanistan, the MTEG mathematics and reading literacy scales were set to a mean of 200 and standard deviation of 20.[11] The mean achievement of Class 6 students in Afghanistan is reported as 200 and nearly all students would be expected to receive a scale score between 160 and 240.

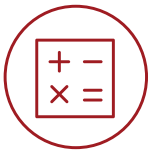
For Class 3, the mean score was 178 in mathematics with a standard deviation of 22. This indicates that around 67% of Class 3 students would be expected to receive a scale score between 156 and 200 and about 95% of Class 3 students to receive a scale score between 134 and 222.

For reading, the mean score of Class 3 students was 184 with a standard deviation of 18. This indicates around 67% of all Class 3 students would be expected to receive a scale score between 166 and 202 and nearly all to receive a scale score between 148 and 220. In the following exhibits, the boundaries of the proficiency levels are expressed on this numeric scale in parentheses, for example Mathematical literacy Level 6 (178 to less than 194).

For mathematical literacy, the Class 6 proficiency scale included seven levels from Level 5 and below to Level 11 and above. No Class 3 students are estimated to be above Level 10, therefore in this report there are seven levels which describe Class 3 achievement from Level 3 and below to Level 9 and above. For Class 3, the lower end of the proficiency scale was extended to accommodate student achievements at an earlier stage of learning.

For reading literacy, the Class 6 proficiency scale included eight levels from Level 4 and below to Level 11 and above. No Class 3 students are estimated to be above Level 11, therefore in this report there are seven levels which describe Class 3 achievement, from Level 4 and below to Level 10 and above.

11 Note: a value of 200 on the MTEG scale does not equate to 200 points out of the total possible number of points on the test.



Mathematical literacy

The Class 3 mathematical literacy assessment was delivered via a tablet-based device with audio support. During the assessment, students were able to activate the audio buttons to hear the instructions through headphones for the majority of tasks. This meant that students with low reading skills could still demonstrate their mathematical abilities without being disadvantaged by their low reading progress. Further information about the features of the tablet-based assessment is provided in Appendix A.

Exhibit 10 is a description of the proficiency scale for mathematics. Examples are items from the Class 3 assessment.[12] This proficiency scale includes additions to the mathematical literacy scale developed for the Class 6 assessment, including descriptions of additional proficiency levels. Exhibit 11 presents the scale with illustrated items from the Class 3 assessment. The original mathematical literacy scale developed for the Class 6 assessment and the illustrated items from the Class 6 mathematical literacy assessment are provided in Appendix C.

Exhibit 10: Proficiency descriptions for mathematics (Class 3)

Level and examples	Proficiency description
Level 9 and above (226 and above) eg Mass of Apples (Class 6)[13] Class 3 students at this level: 1%	Students at this level can typically understand important mathematical terms and processes, and are able to carry out linked calculations that involve a number of steps. Their abstract reasoning skills are developing; they show fluency with calculations involving one-digit and two-digit numbers and calculations involving time; and they can work with data in table and graph form.
Level 8 (210 to less than 226) eg Rug (audio)[14] Complex Pattern (audio) Class 3 students at this level: 6%	Students at this level can typically devise calculation strategies to solve arithmetic and worded problems with numbers up to 1000, including those requiring addition with carrying/renaming, subtraction with borrowing/renaming, multiplication and division by a one-digit number. They understand and use language that relates to mathematical operations and calculation strategies. They can use an appropriate measurement tool to measure the area, volume and mass of familiar objects and materials (eg use grid squares to quantify the area of familiar shapes; small cubes to quantify the volume of cubes or cuboids; a standard weight to measure mass on a balance). Students can perform calculations involving time shown on an analogue clock; they can identify three-dimensional shapes and their features; can interpret simple grid maps using alphanumeric grid references; and interpret simple graphs, tally charts and pictographs to solve problems.
Level 7 (194 to less than 210) eg Pomegranates (no audio) Class 3 students at this level: 16%	Students at this level can typically interpret text describing a familiar situation involving numbers up to 100, formulate an appropriate calculation and use one of the four operations to solve it. They can calculate simple fractions of whole numbers in familiar contexts. They can identify measures of time; recognise the symmetry and reflection properties of familiar objects; use grid references to locate a specified point on a grid; and can interpret and use data represented in column graphs, simple tables and tally charts.

12 Due to the limited number of publicly available items, examples from the Class 3 assessment cannot be given for all levels.

13 Due to the limited number of publicly available items, no example question can be provided to illustrate this level from the Class 3 assessment.

14 Information is provided about whether the assessment tasks contained an audio file to support students.

Exhibit 10: Proficiency descriptions for mathematics (Class 3) (Continued)

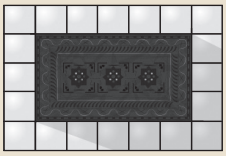
Level and examples	Proficiency description
Level 6 (178 to less than 194) eg Game (audio) Pencil Place Value 2 (audio) Class 3 students at this level: 28%	Students at this level can typically use the four arithmetic operations to solve problems with numbers up to 100 using support materials, and using spatial reasoning, mental methods or written algorithms. They can use place value to recognise the structure used to say, label, write, decompose and compose, and order multi-digit whole numbers, including numbers containing zero. Students are able to sequence events in time; recognise names and features of common two-dimensional shapes; identify the symmetry properties of familiar objects; and identify simple rotations. They can compare data presented in simple pictographs and column graphs.
Level 5 (162 to less than 178) eg Birds on a Roof (audio) Class 3 students at this level: 27%	Students at this level can typically solve addition and subtraction problems with numbers up to 20 in different ways (such as using support materials and mental strategies). They can use place value to say, label and write multi-digit whole numbers, and they can recognise half of a shaded area shown in a diagram. Students can read time from an analogue clock to the hour; compare the mass of objects; and can compare objects in relation to a single attribute (such as longest, full, empty, shortest). They can compare, match and classify common two-dimensional shapes, and can use simple positional language in familiar situations. They can retrieve information from a simple graph or tally chart to identify the number in a specified category.
Level 4 (148 to less than 162) eg Graph Easy (audio) S to L Sequential (audio) Class 3 students at this level: 13%	Students at this level can typically recognise a numeric sequence or a pattern involving one-digit numbers. They can apply simple arithmetic processes with numbers up to 10 involving a single operation of addition or subtraction in a familiar context. They can read, compare and interpret a pictograph or column graph and use informal language to identify categories (eg 'the category having the most members').
Level 3 and below (less than 148) eg Camel (audio) Class 3 students at this level: 9%	Students at this level can typically recognise the concept of quantity and count reliably to 10. They can sort and classify familiar objects and use informal measurement language to compare and describe attributes of objects (eg 'the tallest object').

Exhibit 11: Graphic representation of illustrated mathematics scale (Class 3)

Level 9 and above

Level 8

Badriah puts this rug on the tiled floor.
How many tiles does the rug cover?



- ○ 8
- ○ 10
- ○ 15
- ○ 20

This is one tile

Level 7

Which of these shows how to work out how many pomegranates there are?

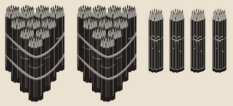
- ○ 4 + 3
- ○ 3 + 3 + 3
- ○ 4 ÷ 3
- ○ 4 × 3

Level 6

ten pencils

one hundred pencils

How many pencils are below?
Put in the answer.



24 240 204

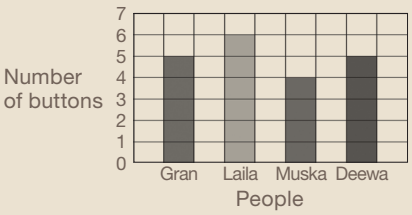
Level 5

There are 15 birds sitting on a roof. 8 birds fly away.
How many birds are left on the roof?

7 8 23 15

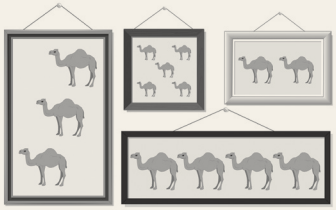
Level 4

Look at this graph. Select the person who has the most buttons.



Level 3 and below

Select the picture that has five camels.



What Class 3 students know, understand and can do in mathematical literacy

Seven levels of proficiency provide descriptions of the mathematical literacy of Class 3 students in Afghanistan.

Level 9 and above (226 and above)

Students performing at and above Level 9 are the most proficient in their class.

1% of students in Class 3 performed at Level 9 and above.

Typically, students at Level 9 and above can recognise technical terms for a variety of mathematical objects. They can carry out sequential reasoning and calculations involving multiple steps. They can use spatial reasoning to define, identify, count and compare particular characteristics of shapes. They show fluency with calculations involving one-digit and two-digit numbers. They show understanding of the structure of decimal numbers. They are beginning to use algebraic thinking as they deal with symbolic representations. They can interpret time represented in both analogue and digital form and perform time-related calculations. They can work flexibly with data presented in a table and in a related graphical form. They can recognise numerical and geometric patterns, for example in number sequences.

Due to the limited pool of items being released to the public, no example question can be provided to illustrate this level from the Class 3 assessment. However, Exhibit 12 provides an example task from the Class 6 assessment and illustrates the kind of task that students performing at Level 9 and above are able to do.

Exhibit 12: Mass of Apples

Najia buys 7 apples.

They have a mass of 850 grams altogether.

What is the approximate mass of one apple?

A. about 12 grams

B. about 80 grams

C. about 120 grams

D. about 600 grams

Key: about 120 grams (C)
Difficulty: 231 (Level 9)

Level 8 (210 to less than 226)

Students performing at Level 8 are very high achievers relative to their cohort.

6% of students in Class 3 performed at Level 8.
A further 1% of students performed above Level 8.

Students performing at this level are typically able to interpret a problem, presented in text form and related images, that describes familiar contexts and objects (for example, different money denominations, counts of objects).

They can identify and perform calculations of different kinds involving numbers up to 1000 (including addition with carrying, subtraction with borrowing, multiplication, division by a one-digit number, and using an understanding of place value to support such calculations). They can interpret relational phrases such as 'how many more 'or how much higher', or a score difference, to formulate an appropriate calculation (subtraction).

They understand and use language that relates to mathematical operations and calculation strategies (such as ''sum'', ''difference'', ''shared equally''); can use the concept of ''equivalence'' to devise calculation strategies and to reason about problem situations in familiar contexts; and can continue a repeating pattern of multiple elements or identify missing elements in it.

Students can use an appropriate measurement tool to measure the area, volume and mass of familiar objects and materials (eg use grid squares to quantify the area of familiar shapes; small cubes to quantify the volume of cubes or cuboids; a standard weight to measure mass on a balance); and recognise different units of measurement. They can perform time calculations with time shown on an analogue clock.

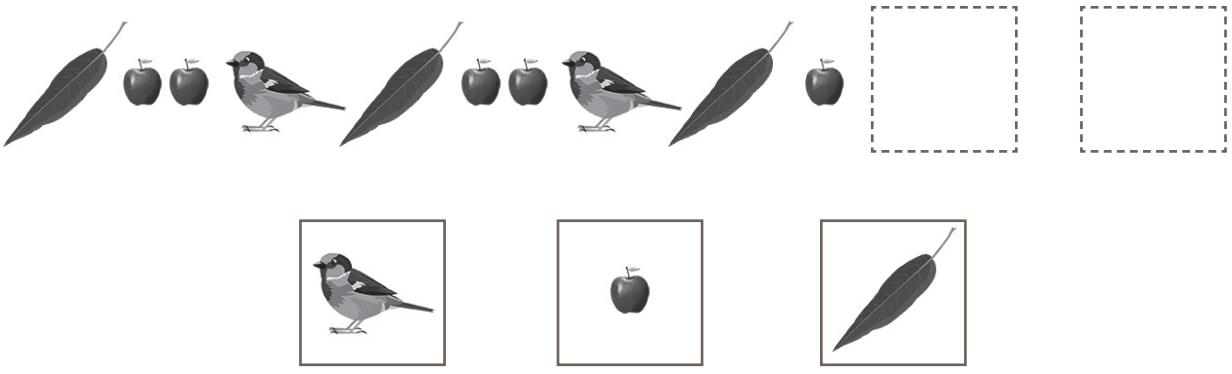
Students can identify common three-dimensional shapes and understand common technical terms (such as 'faces' and 'edges'); and can use spatial reasoning to imagine an object from a different perspective.

They can interpret simple grid maps using alphanumeric grid references; and interpret simple graphs, tally charts and pictographs to solve problems – for example, to calculate a total represented by several rows on a tally chart, or to calculate the difference between rows.

Exhibit 13 and Exhibit 14 are examples of tasks at this level.

Exhibit 13: Complex Pattern

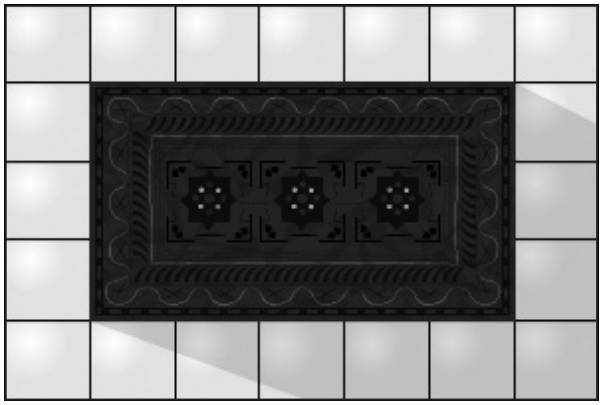
Put in the pictures to continue the repeating pattern.



Key: Berry, Bird
Difficulty: 216 (Level 8)

Exhibit 14: Rug

Badriah puts this rug on the tiled floor. How many tiles does the rug cover?



This is one tile.

- ○ 8
- ○ 10
- ○ 15
- ○ 20

Key: 15 (C)
Difficulty: 216 (Level 8)

Level 7 (194 to less than 210)

Class 3 students at Level 7 are high achievers relative to their cohort.

16% of students in Class 3 performed at Level 7.
A further 7% of students performed above Level 7.

Students at this level can typically interpret simple text describing a familiar situation involving numbers up to 100 (such as sharing of objects or finding the difference), formulate an appropriate calculation (such as division or subtraction), and use one of the four operations to solve it.

They are able to carry out basic arithmetic such as addition with one- and two-digit numbers, subtraction of a one-digit number from a two-digit number, and multiplication of one-digit numbers by one- or two-digit numbers. Students can calculate simple fractions of whole numbers in familiar contexts.

They can identify measures of time (second, minute, hour, day, week, month, year, season); and recognise the symmetry and reflection properties of familiar objects, for example, reflection in a mirror, or matching images across a fold line).

They use grid references to locate a specified point on a grid (such as a map with grid references); and can interpret and use data represented in column graphs, simple tables and tally charts.

Exhibit 15 is an example of a task at this level.

Exhibit 15: Pomegranates

Which of these shows how to work out how many pomegranates there are?

- ○ 4 + 3
- ○ 3 + 3 + 3
- ○ 4 ÷ 3
- ○ 4 × 3

Key: 4 × 3 (D)
Difficulty: 208 (Level 7)

Level 6 (178 to less than 194)

Students performing at Level 6 are around and slightly above the average proficiency level for their cohort: the mean score on the scale for Class 3 is 178.

28% of students in Class 3 performed at Level 6.
A further 23% of students performed above Level 6.

Students at this level can typically use the four arithmetic operations to solve problems with numbers up to 100 using support materials, spatial reasoning, mental methods or written algorithms.

They can use place value to recognise the structure used to say, label, write, decompose and compose multi-digit whole numbers, including numbers containing zero.

They can interpret images of familiar objects and use spatial reasoning, for example to devise and apply a counting strategy for stacked objects.

Students are able to sequence and describe events in time using informal comparison (eg before/after, older/younger, which event takes longer?).

They can identify the names and features of common two-dimensional shapes; recognise the symmetry properties of familiar objects; and identify simple rotations (eg reflection in a mirror, matching images across a fold line, and identifying simple rotations such as a half turn).

They can compare data presented in simple pictographs and column graphs, for example involving mathematical properties such as length.

Exhibit 16 and Exhibit 17 are examples of tasks at this level.

Exhibit 16: Game

- 4 children are playing Sangchel Bazi. They have 5 pebbles each.
  How many pebbles do they have altogether?

9	20	5	25

Key: 20 (B)
Difficulty: 192 (Level 6)

Exhibit 17: Pencil Value 2

- ten pencils

- one hundred pencils

- How many pencils are below? Put in the answer.

24	240	204

Key: 240 (B)
Difficulty: 181 (Level 6)

Level 5 (162 to less than 178)

Students at Level 5 are performing below the average level achieved by students in their cohort.

27% of Class 3 students performed at Level 5.
A further 51% of students performed above Level 5.

Students at this level can typically solve addition and subtraction problems with numbers up to 20 in different ways (using support materials and strategies such as counting on, counting back, counting all, grouping, and sharing).

They can use place value to recognise the structure used to say, label and write multi-digit whole numbers; and can recognise half of a shaded area shown in a diagram. They understand that fractions of an object must be equal in size.

Students can read time from an analogue clock to the hour; compare the mass of objects (eg using hefting, or using a simple balance).

They can compare objects in relation to a single attribute (eg to find which is longest from a set of objects; empty, nearly full, full).

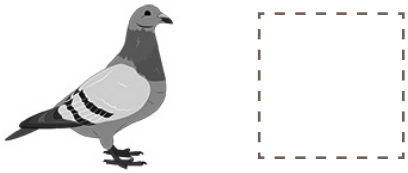
Students can compare, match and classify two-dimensional shapes (eg circle, square, rectangle, triangle); and can interpret and apply positional terms such as ''next to'', ''onto'', ''under''.

They can retrieve information from a simple graph or tally chart to identify the number in a specified category (single digits).

Exhibit 18 is an example of a task at this level.

Exhibit 18: Birds on a Roof

There are 15 birds sitting on a roof. 8 birds fly away. How many birds are left on the roof?



7	8	23	15

Key: 7 (A)
Difficulty: 169 (Level 5)

Level 4 (148 to less than 162)

Students at this level are performing below the average level achieved by students in their cohort.

13% of students in Class 3 performed at Level 4.
A further 78% of students performed above Level 4.

Students at this level can typically recognise a numeric sequence or a pattern involving numbers up to 20 (represented by numerals or shapes).

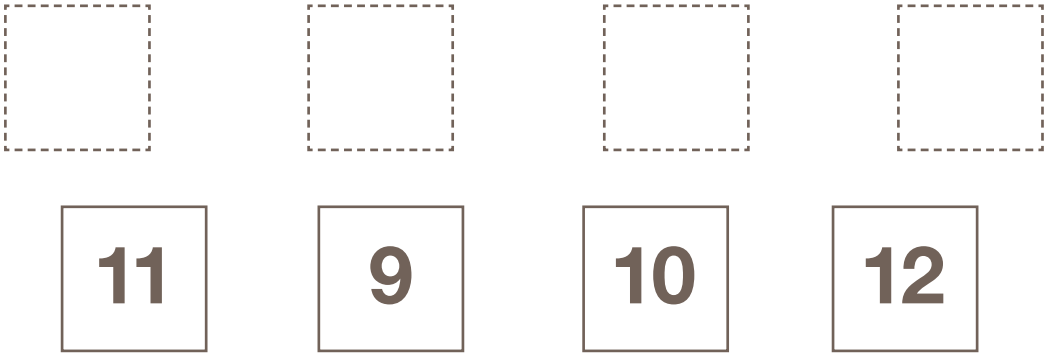
They can apply simple arithmetic processes with numbers up to 10 involving a single operation of addition or subtraction in a familiar context (such as pictures, concrete materials such as money, and a story).

Students can read, compare and interpret a pictograph or column graph and use informal language to identify categories (eg 'most').

Exhibit 19 and Exhibit 20 are examples of tasks at this level.

Exhibit 19: S to L Sequential

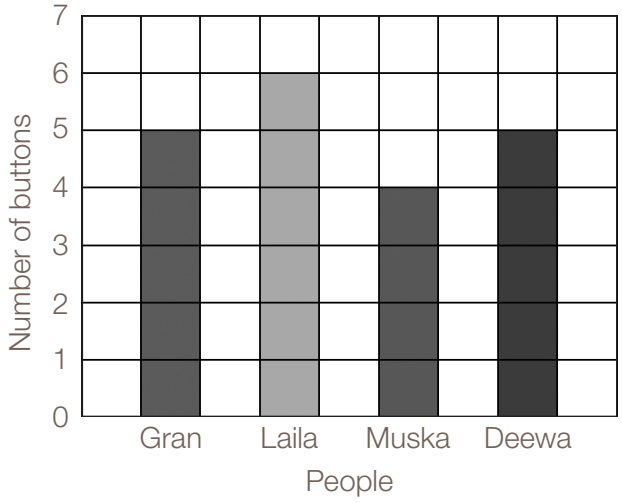
Put the numbers in order from smallest to largest.



Key: 9, 10, 11, 12
Difficulty: 169 (Level 4)

Exhibit 20: Graph Easy

Look at this graph. Select the person who has the most buttons.



Key: Laila (B)
Difficulty: 155 (Level 4)

Level 3 and below (less than 148)

Students at this level are performing below the average level achieved by students in their cohort.

9% of students in Class 3 performed at or approaching Level 3. A further 91% of students performed above Level 3.

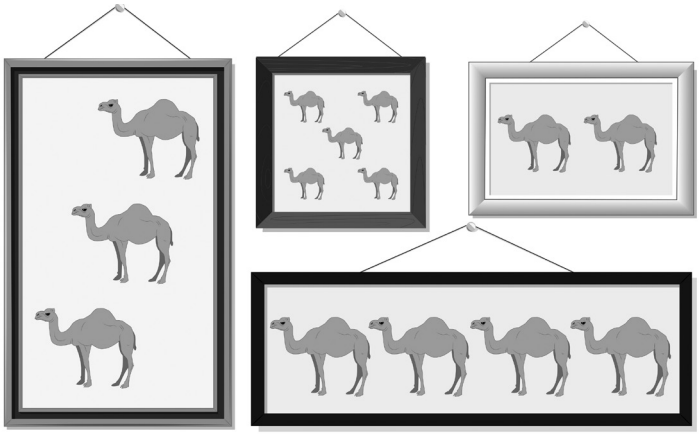
Students at this level can typically recognise the concept of quantity, and count reliably to 10. They understand that the last number counted represents the total number.

They can label, classify and sort familiar objects, and can use informal language to compare and describe attributes of objects (eg 'longest').

Exhibit 21 is an example of a task at this level.

Exhibit 21: Camel

▶ Select the picture that has five camels.



Key: Top middle picture (B)
Difficulty: 135 (Level 3)

Reading literacy

The Class 3 reading literacy assessment was delivered via a tablet-based device with audio support. During the assessment, students were able to activate the audio buttons to hear instructions, questions and stories read aloud to them. Using different levels of audio support enabled a test design that could provide more detailed information about the abilities of students who are Emerging Readers than is possible with a paper-based assessment. For example, audio support facilitates testing the sounds of letters. Emerging Readers are likely to have strong oral pre-literacy skills, and may also read words and comprehend simple sentences. In contrast, Independent Readers are students who can read and comprehend more complex sentences and paragraphs independently without audio support. Further information about the features of the tablet-based assessment are provided in Appendix A.

A process to identify Independent and Emerging Readers was employed by giving students a short reading task prior to the MTEG assessment. Students were then provided with either an Independent Reader or Emerging Reader assessment, which contained tasks appropriate to their reading level.

As with mathematics, all assessment tasks were delivered in Dari or Pashto. The reading assessment contained some unique Dari and Pashto items that differed in content but were similar in difficulty and assessed the same skills. This enabled the different linguistic requirements of the two languages to be met.

Exhibit 22 is a description of the proficiency scale for reading. Examples are items from the Class 3 assessment[15]. Exhibit 23 presents the scale with illustrated items. Illustrated items from the Class 6 reading literacy assessment are provided in Appendix D.

15 Due to the limited number of publicly available items, examples cannot be given for all levels.

Exhibit 22: Proficiency descriptions for reading (Class 3)

Level and examples	Proficiency description
Level 10 and above (222 and above) Class 3 students at this level: 2%	Students at this level are typically able to identify the main message and clearly stated details, even when they are not in a prominent position, in short texts on familiar topics. These texts include narratives and letters, and information presented in tables.
Level 9 (210 to less than 222) eg Hasti and the Birds Q1 • Independent Reader test item • full audio support for long text and items Drinking Tea • Independent Reader test item • no audio support for very short text and items Class 3 students at this level: 5%	Students at this level are typically able to identify, interpret and link one or two pieces of explicitly stated information from different parts of texts on familiar topics to make inferences, where there is strong support in the text such as illustrations, or where the information is in a prominent position.

Exhibit 22: Proficiency descriptions for reading (Class 3) (Continued)

Level and examples	Proficiency description
Level 8 (198 to less than 210) eg Hasti and the Birds Q3 • Independent Reader test item • full audio support for long text and items Market Stall • Emerging Reader and Independent Reader test item • partial audio support for question but not for matching names to pictures Class 3 students at this level: 15%	Students at this level are typically able to identify directly stated information and match synonymous words to make links in short texts on familiar topics such as family or school, or a longer text with strong support given in the task (such as a key word from the text); and they can recognise information about concrete objects or well-known things such as animals.
Level 7 (186 to less than 198) eg Zaher in the City • Emerging Reader and Independent Reader test item • partial audio support for question but not for short text Kabul Sign • Emerging Reader and Independent Reader test item • partial audio support Class 3 students at this level: 25%	Students at this level are typically able to recognise simple details, explicitly stated, in a very short simple text; and they can identify the message of a narrative supported by repetition in the text or the purpose of a street sign.
Level 6 (174 to less than 186) eg Cat • Emerging Reader test item • no audio support to match picture to word Class 3 students at this level: 25%	Students at this level are typically able to recognise the meaning of single sentences on familiar topics and they can match one of four given words to a simple illustration of a familiar object, where the other three words may have similarities to the target word in meaning or graphic appearance.
Level 5 (162 to less than 174) eg Letter Sound 2 • Emerging Reader test item • partial audio support to match the sound with a letter Class 3 students at this level: 17%	Students at this level are typically able to identify a sound for all letters and most common letter combinations.
Level 4 and below (less than 162) eg Cooking[16] • full audio support to match word to picture Class 3 students at this level: 11%	Although there were insufficient items at this level to create a detailed description, it can be assumed that students at Level 4 and below are able to match oral descriptions, phrases and vocabulary to pictures. They can use their oral pre-literacy skills to follow instructions and simple retrieval of information.

16 Due to the limited number of publicly available items, no example questions can be provided to illustrate this level from the Class 3 assessments. However, to illustrate this level an example of the type of question at Level 4 and below is provided.

Exhibit 23: Graphic representation of illustrated reading scale (Class 3)[17]

Level 10 and above

Level 9

What happened?

- ○ Saddaf decided not to drink her tea.
- ○ Saddaf finished her tea.
- ○ Saddaf spilt her tea.

Level 8

▶ How did the pigeon's nest look when it was finished?

- ▶ messy
- ▶ strange
- ▶ nice

Level 7

▶ What does this sign tell you? Choose one answer.

- ▶ how far away Kabul is
- ▶ you have arrived at Kabul
- ▶ how many people live in Kabul

Level 6

▶ Select the correct word for the picture.

- ○ bird {parenda (D) / marghay (P)}
- ○ cat {peshak (D) / peshoo (P)}
- ○ balloon {poqhana (D) (P)}
- ○ spinach {palak (D) (P)}

Level 5

▶ Select the letter that makes the sound _____ *(audio sound: zzz).*

- ○ sey {Dari and Pashto letter}
- ○ rey {Dari and Pashto letter}
- ○ zhey {Dari and Pashto letter}
- ○ hey {Dari and Pashto letter}

Level 4 and below

17 See Exhibit 24 for the full text for Drinking Tea (Level 9 example task) and Exhibit 25 for the full text for Hasti and the Birds (Level 8 example task).

What Class 3 students know, understand and can do in reading literacy

Seven levels of proficiency provide descriptions of the reading literacy of Class 3 students in Afghanistan.

Level 10 and above (222 and above)

Students performing at and above Level 10 are the most proficient in their class.

2% of students in Class 3 performed at Level 10 and above.

Students at this level are typically able to identify the main message, link clearly stated details and make inferences, even when they are not in a prominent position or there is competing information, in short texts on familiar topics.

Due to the limited pool of items being released to the public, no example question can be provided to illustrate this level.

Level 9 (210 to less than 222)

Students performing at Level 9 are very high achievers relative to their cohort.

5% of students in Class 3 performed at Level 9.
A further 2% of students performed above Level 9.

Students at Level 9 are typically able to identify, interpret and link one or two pieces of explicitly stated information in both narrative and information texts. These texts may vary in length and delivery, for example, they may include short inferential narratives of fewer than three sentences read independently. Texts may also include long and dense narratives with audio support where the task provides strong support (such as illustrations or the information is in a prominent position, perhaps at the beginning of the text). They can make a simple inference about a character's actions and behaviour in relation to the explicit sequence of events throughout the plot, and interpret directly stated factual information with some competing information.

Some of the tasks found to be at Level 9 included those which tested students' skills in identifying the title and author from a 'book cover', which did not rely on being able to decode and comprehend text. These tended to be difficult tasks for Class 3 students in Afghanistan, with only a small percentage of students answering these tasks correctly. In Western education curricula, the explicit teaching of terms such as 'title' and 'author' is common practice. However, the results from MTEG suggest that Class 3 students in Afghanistan may have had limited exposure to these terms.

Exhibit 24 and Exhibit 25 are examples of tasks at this level.

Exhibit 24: Drinking Tea Q1

Saddaf was drinking tea when a bird flew close by. It made her drop the cup and it smashed on the ground.

What happened?

- ○ Saddaf decided not to drink her tea.
- ○ Saddaf finished her tea.
- ○ Saddaf spilt her tea.

Key: Saddaf spilt her tea. (C)
Difficulty: 215 (Level 9)

Students are able to independently read this very short stimulus text and options and identify the outcome by matching it with one of the three options. They can interpret the action of the cup smashing resulting in the tea being spilt and consequently the other two options not being possible.

Exhibit 25: Hasti and the Birds Q1

Once there was a girl called Hasti who sat by her bedroom window trying to think of something to do. Her family was busy preparing the house for the arrival of guests, but she did not feel like doing that. Suddenly, she heard a noise. Tap, tap, tap. There was a pigeon at the window. Hasti went outside to see what it wanted.

"Hello pigeon," said Hasti. "Why are you tapping at the window?" The pigeon flew down and picked up a twig. "I don't understand," said Hasti. "Do you want to play?" The pigeon flew over to a tree and put the twig between two branches. "Oh I see!" said Hasti. "Everyone needs a home. I'd be happy to help."

Hasti picked up twigs and leaves to give to the pigeon. Soon the pigeon had made a beautiful nest. It settled down in its new home, looking very comfortable. Just then, a sparrow flew down to Hasti's feet and looked up at her. "What do you want sparrow?" asked Hasti. "Do you need a home too?"

The sparrow flew up into a different tree and sat down in a nest. "You don't need my help little one," Hasti said. "You have a home." Hasti started to walk back inside when she heard a loud cheeping noise. The noise was coming from the sparrow's nest. Hasti looked closely and saw three little beaks peaking over the edge. "How wonderful!" cried Hasti. "Three baby sparrows!". Hasti realised they must be crying for food.

"I will find them lunch," said Hasti. She dug a small hole in the garden and pulled out a worm. The sparrow took the worm from Hasti and fed it to the baby bird, then settled down next to them. The baby birds were no longer cheeping. Hasti's mother called from inside the house. "Hasti! Stop wasting time out here. You should be helping." "Of course Mum," said Hasti. "I'm very good at helping."

- What was Hasti doing when she saw the pigeon?
  - helping her family
  - playing in her bedroom
  - thinking of what to do
  - playing outside

Key: thinking of what to do (C)
Difficulty: 214 (Level 9)

Students are able to locate the information at the beginning of the text that refers to when Hasti first saw the pigeons. They will scan (or choose to listen again) to the information before and after this reference to identify the section that links what she was doing when she saw the pigeons. As it is not a direct word match, students will need to make a simple interpretation of this explicit information.

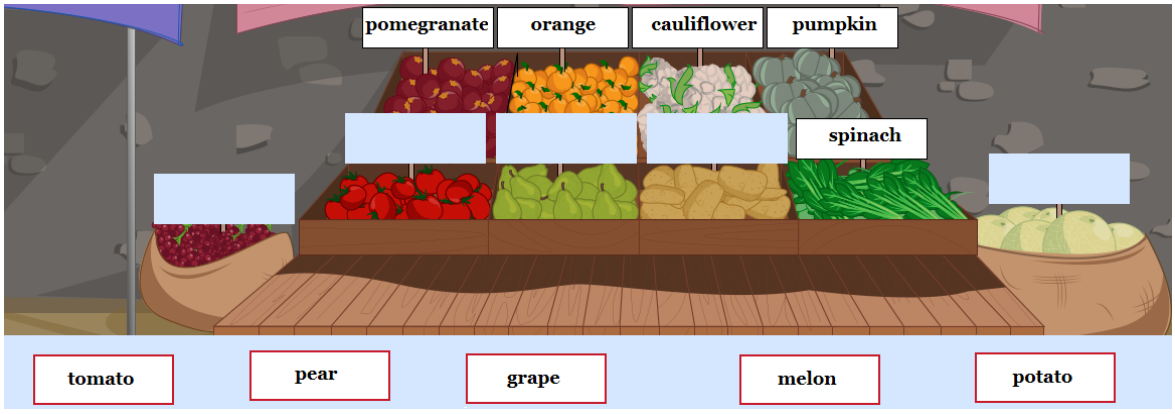
Level 8 (198 to less than 210)

Students performing at Level 8 are high achievers relative to their cohort.
15% of students in Class 3 performed at Level 8.
A further 7% of students performed above Level 8.
Students at this level are typically able to identify directly stated information and match synonymous words to make links and interpretations in both narrative and information texts. These texts may vary in length and delivery, and may include a very simple narrative that uses repetition, a simple inferential narrative of fewer than three sentences (both read independently) or a long, dense narrative with audio support. Tasks for the longer texts provide strong support through illustrations or key words. They can make a simple inference by linking directly stated information to recognise a character's feelings or intent. They understand the function of a familiar punctuation mark, can identify the purpose of unfamiliar street signs that use symbols and text and recognise the first letter of words represented by pictures without audio support.

Exhibit 26 and Exhibit 27 are examples of tasks at this level. The full text for Hasti and the Birds is provided in Exhibit 25.

Exhibit 26: Market stall

- Put the correct labels for the fruit and vegetables



Key: grape, tomato, pear, potato, melon (in that order)
Difficulty: 201 (Level 8)

Students are able to independently read all five labels and match them to the corresponding images. As this task does not have partial credit or audio support, correct decoding and comprehension of all five words (of varying lengths and spelling structures) are required, which increases the difficulty.

Exhibit 27: Hasti and the Birds Q3

- How did the pigeon's nest look when it was finished?
  - messy
  - strange
  - nice

Key: nice (C)
Difficulty: 199 (Level 8)

Students are able to locate the information in the middle of the stimulus text and make a match between the two synonymous adjectives 'nice' and 'beautiful' to describe the nest.

Level 7 (186 to less than 198)

Students performing at Level 7 are around and slightly above the average proficiency level for their cohort: the mean score on the scale for Class 3 is 186.

25% of students in Class 3 performed at Level 7.
A further 22% of students performed above Level 7.

Students at this level are typically able to locate information directly stated and recognise simple details, in very short texts, where the task provides strong support such as universally recognised symbols and partial or full audio support. They can identify various aspects of familiar street signs. Using audio support they can identify less familiar sounds to the ending of words.

Exhibit 28 is an example of a task at this level.

Exhibit 28: Zaher in the City Q1

Zaher is in the city.
He buys an umbrella.
It is yellow.
He buys a cup of tea.
The tea has milk in it.

▶ Select the word in the story that is a boy's name.

(Response is recorded when the student touches the word within the stimulus text).

Key: Zaher
Difficulty: 195 (Level 7)

The student is provided with audio support for the instruction but not the stimulus text, but will be able to scan the five sentences and locate the word that represents a boy's name. There is only one name in the stimulus text and it appears in the first sentence, however being able to decode and read each word is a necessary skill in order to make the correct selection.

Level 6 (174 to less than 186)

Students at Level 6 are performing below the average level achieved by students in their cohort.

25% of Class 3 students performed at Level 6.
A further 47% of students performed above Level 6.

Students at this level are typically able to recognise the meaning of single, very simple sentences on familiar topics where the task requires direct word matching. Students are also able to match one of four given words to a simple illustration of a familiar object, where the other three words may have similarities to the target word in meaning or graphic appearance without audio support. They can use audio support to match the spoken word to one of three, multi-syllabic written words without illustrations.

Exhibit 29 is an example of a task at this level.

Exhibit 29: Cat

Select the correct word for the picture.

- ○ bird {parenda (D) / marghay (P)}
- ○ cat {peshak (D) / peshoo (P)}
- ○ balloon {poqhana (D) (P)}
- ○ spinach {palak (D) (P)}

Key: cat (B)
Difficulty: 179 (Level 6)

Students are able to decode and distinguish the differences between the four options, that mostly all begin with the same letter, in order to match the correct word with a familiar picture. Although audio support instructs the student on what to do (Select the correct word for the picture) it does not provide any further information so the ability to be able to read the word ‘cat’ and not just recognise the first letter is necessary.

Level 5 (162 to less than 174)

Students at Level 5 are performing below the average level achieved by students in their cohort.

17% of Class 3 students performed at Level 5.
A further 72% of students performed above Level 5.

Students at this level are typically able to identify a sound for all single letters and most common letter combinations. They may recognise the first letter of a word represented by a picture when both the letter and picture are highly familiar and when there is minimal or no competing information.

Exhibit 30 is an example of a task at this level.

Exhibit 30: Letter Sound 2

▶ Select the letter that makes the sound _____ (audio sound: zzz).

- ○ sey {Dari and Pashto letter}
- ○ rey {Dari and Pashto letter}
- ○ zhey {Dari and Pashto letter}
- ○ hey {Dari and Pashto letter}

Key: zhey (C)
Difficulty: 163 (Level 5)

Students need to identify the sound provided within the audio instruction and then match it to the four single letter options, all of which are simple in structure but two of the letters have only an 'extra dot' as the differing feature.

Level 4 and below (less than 162)

Students at Level 4 and below are performing below the average level achieved by students in their cohort.

11% of students in Class 3 performed at or approaching Level 4.
A further 89% of students performed above Level 4.

Students at this level are likely to be at a pre-literacy stage so are unable to match their oral skills with written letters or words.

Exhibit 31 provides an example of the type of task that students performing at Level 4 would be expected to be able to do, such as match words and phrases provided with full audio support to pictures. This task measures students' vocabulary ability as well as their ability to comprehend and follow an aural instruction. Both of these are important pre-literacy skills.

Exhibit 31: Cooking

▶ Select the picture that shows a person cooking.




Key: B
Difficulty: Level 4 and below

Class 3 proficiency: girls and boys

The range of ages in Class 3 and Class 4 is quite wide, from 8 years and younger to 13 years old and older. There were similar proportions of girls and boys in each age group.

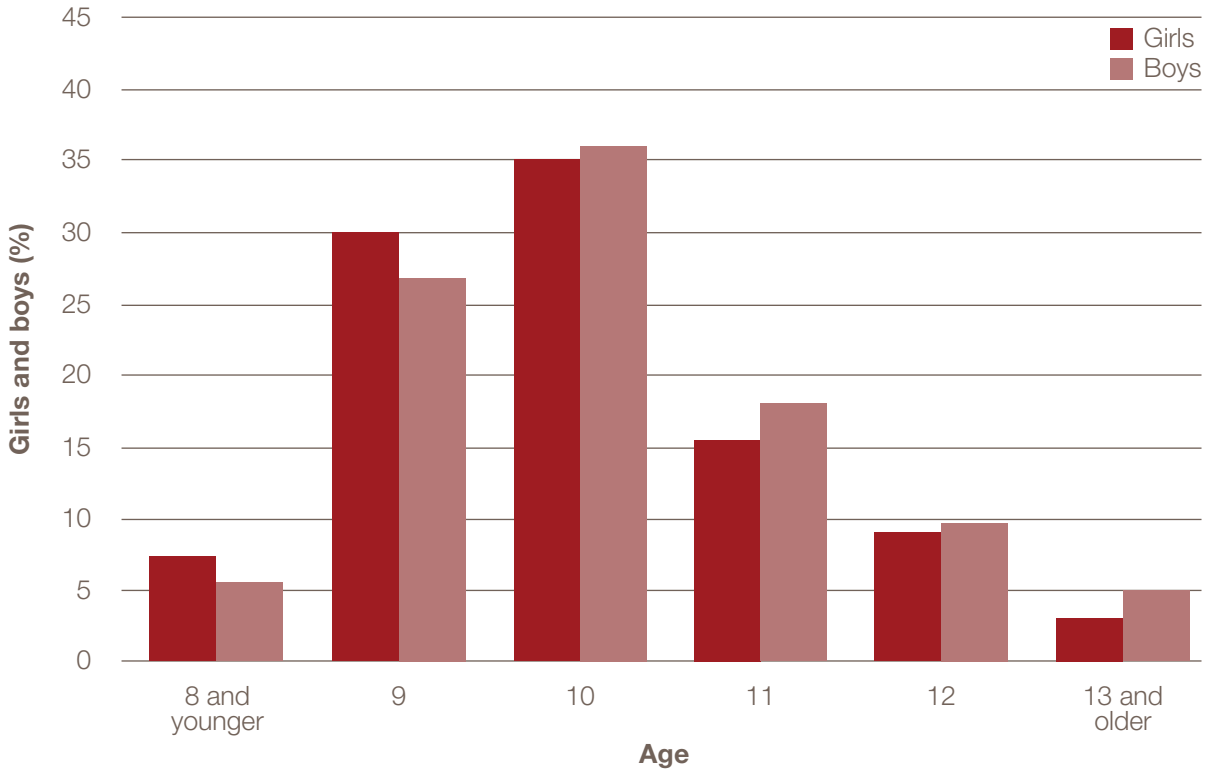
The data show that, on average, it was the students aged 10 years and older who performed best in mathematical and reading literacy compared to those who were younger than 10 years.

In mathematical literacy, boys performed significantly better than girls. In reading literacy, girls and boys achieved the same score overall. For both domains, about the same proportions of girls and boys performed at each proficiency level.

Ages of Class 3 girls and boys

In the questionnaire, students were asked their ages. As can be seen in Exhibit 32, the range of ages was quite wide, from 8 years and younger to 13 years old and older. However, the majority of both girls and boys were between 9 and 12 years (89% of girls and 90% of boys).[18] There were no significant differences in the proportions of girls and boys within each age group.

Exhibit 32: Percentage of boys and girls in each of the Class 3 age categories



18 In Class 6 there were large proportions of girls and boys who did write their age on the questionnaire (14% of girls and 17% of boys). However, for Class 3 students the test administrator asked each student their age and recorded this for them. As a result, almost all students reported their age; only 0.4 per cent of students did not report this information.

The official starting age for the first year of primary education in Afghanistan (Class 1) is 7 years (Afghanistan Ministry of Education, 2014). Therefore, if students complete one class every year, they would be expected to be between 9 and 10 years towards the end of Class 3 and between 10 and 11 years towards the beginning of Class 4.[19] Students older than 12 years may have repeated one or more years or may have commenced school later than the official starting age.

Overall, students aged 10 years and older performed slightly better than students aged 9 years and younger in both mathematical and reading literacy. There were no significant differences between students who were 10, 11, 12 or 13 years and no differences between students who were 8 and 9 years.

Mathematical and reading literacy of Class 3 girls and boys

Before presenting the distributions of girls and boys at each of the proficiency levels in the two domains, it is helpful to have an overview of girls' and boys' mean achievement.

- In mathematics, on average, boys perform slightly above the overall mean of 178 and girls on average perform slightly below (see Exhibit 33) with the difference between boys and girls being statistically significant.
- In reading, boys' and girls' achievement are both around the overall mean of 184. There are no statistically significant differences between boys' and girls' reading achievement.

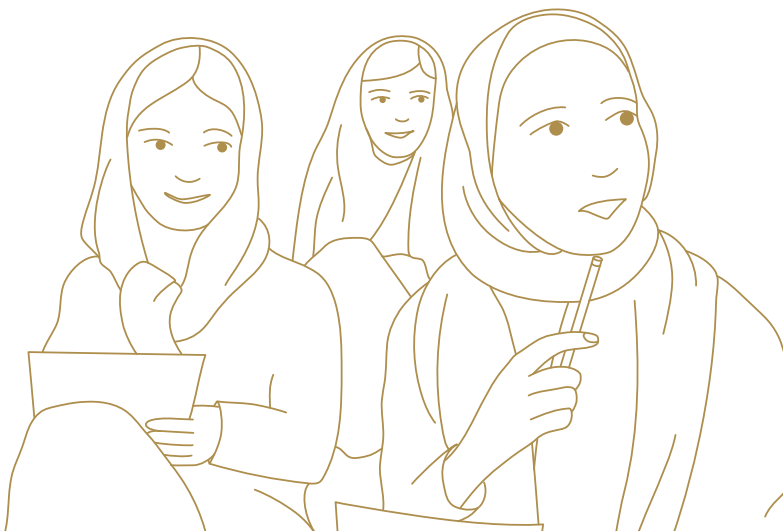
While on average boys performed better than girls in mathematics, the differences in proportions of girls and boys at each mathematics proficiency level were not statistically significant (see Exhibit 34).

More than half of boys (54%) achieved at proficiency Levels 6 to 9 and above, compared to just under half of girls (48%).

As expected from the overall results presented in Exhibit 33, the differences in proportions of girls and boys at each proficiency level for reading were not statistically significant (see Exhibit 35).

Exhibit 33: Mean achievement for Class 3 girls and boys[21]

	Girls (A)	Boys (B)	Difference Girls–Boys (A-B)	Statistical significance
Mean mathematics achievement	177	180	-3	∇
Mean reading achievement	184	184	0	-



19 As discussed in the section on the MTEG sample, Class 3 students in hot region schools and Class 4 students in cold region schools took part in the assessment.

20 Achievement levels should not be compared between domains, as the scale for each domain is constructed independently and has different parameters.

Exhibit 34: Differences in mathematics proficiency levels by gender (Class 3)

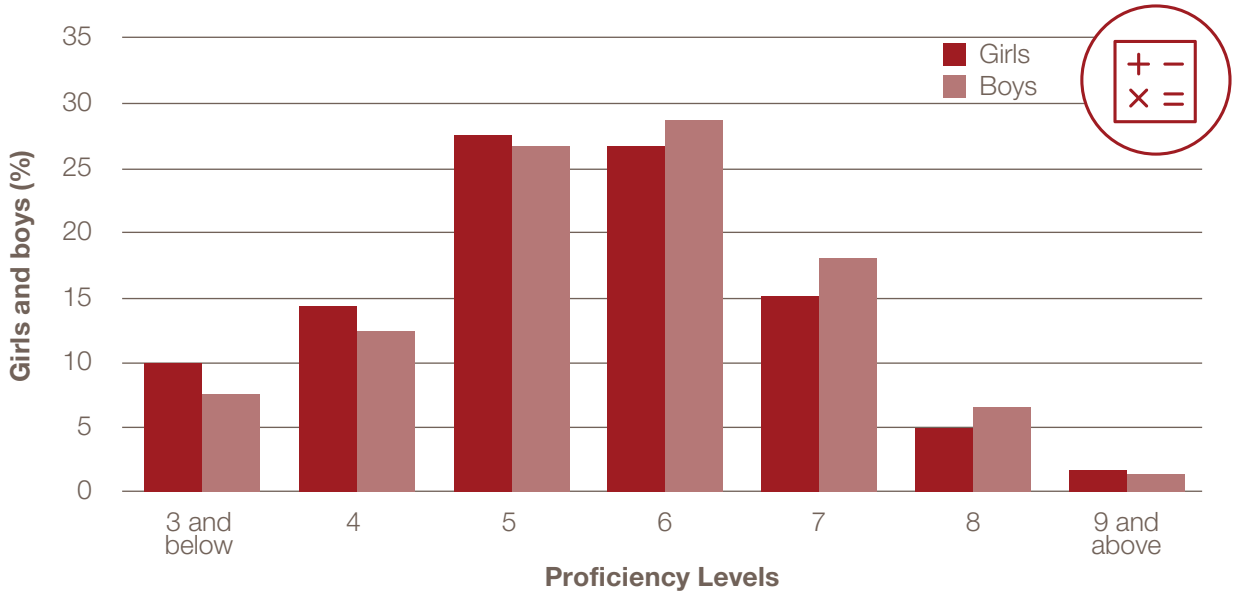
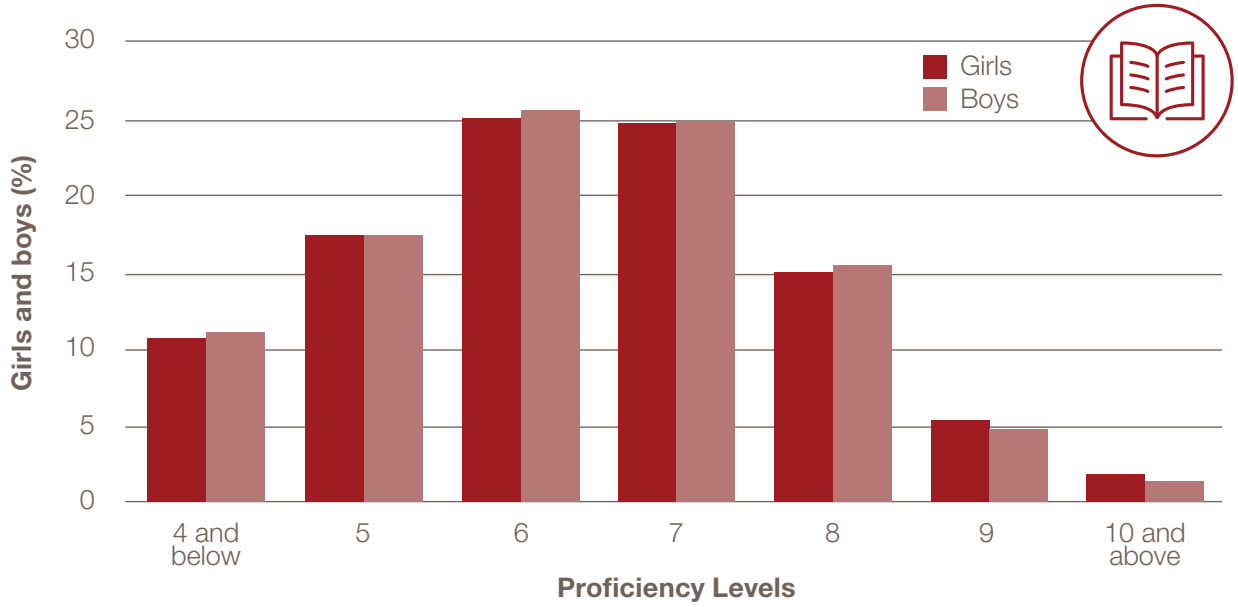
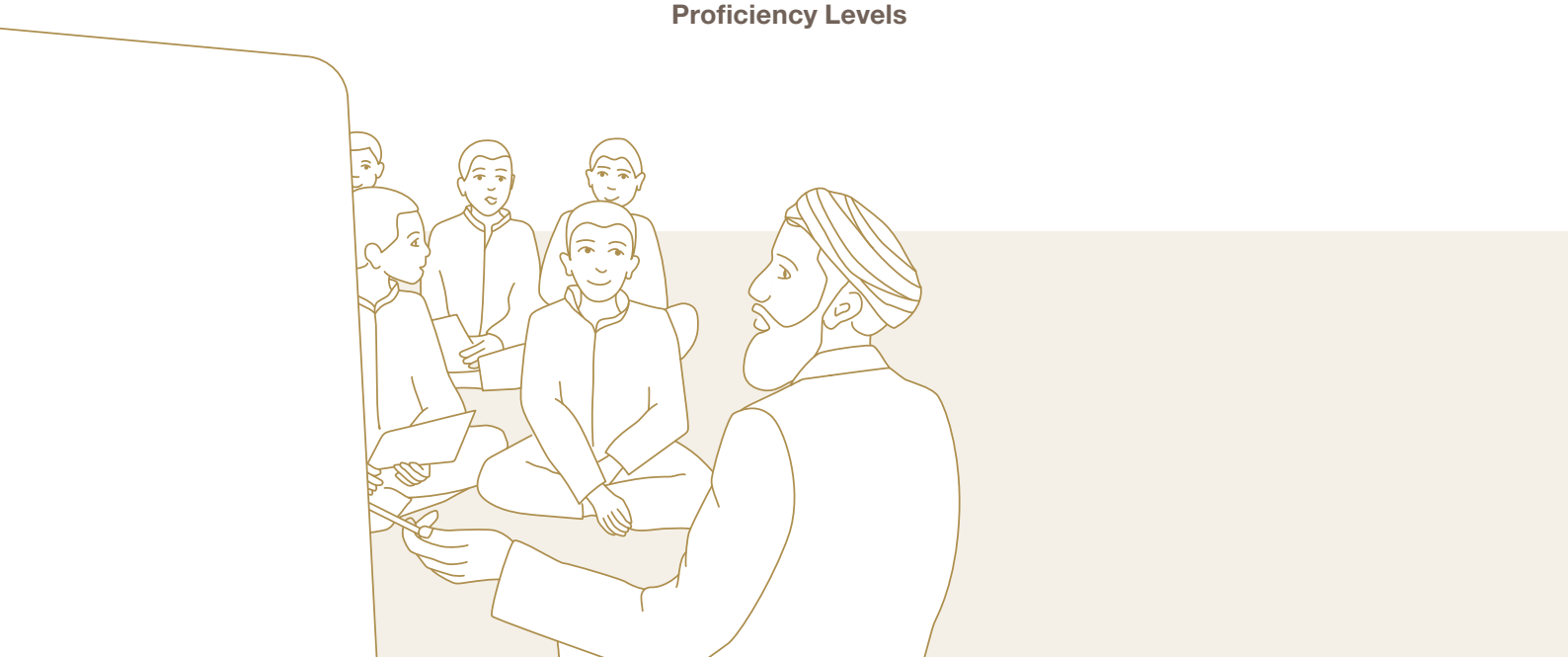


Exhibit 35: Differences in reading proficiency levels by gender (Class 3)





Class 3 proficiency: urban and non-urban

Overall, students from urban areas demonstrated higher levels of mathematical and reading literacy than those from non-urban areas.

Girls from urban areas outperformed girls from non-urban areas in both domains. Likewise, boys from urban areas outperformed boys from non-urban areas in both mathematical and reading literacy.

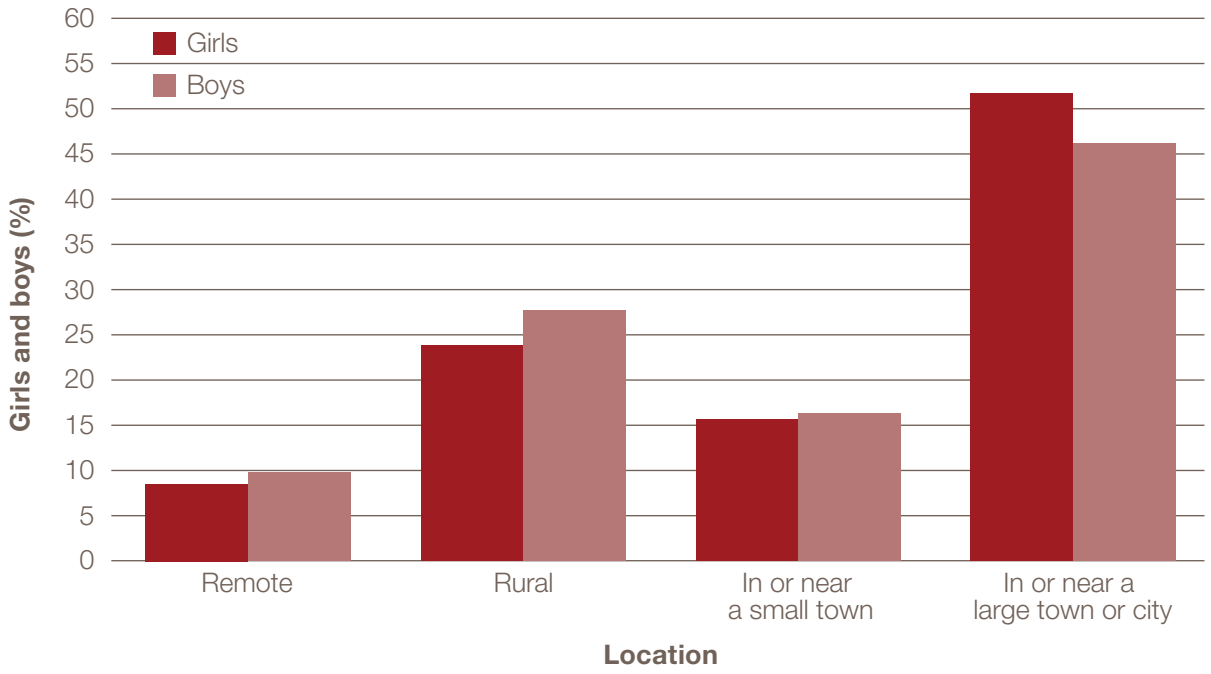
There was no statistically significant difference in mathematical or reading literacy achievement between girls from non-urban areas and boys from non-urban areas. There is also no statistically significant difference in achievement between girls from urban areas and boys from urban areas for either domain.

School location of Class 3 students

In the school questionnaire, the principals were asked about the location of their schools. They were given a choice of 'Remote', 'Rural', 'In or near a small town', and 'In or near a large town or city'. According to their answers, the percentage of girls and boys who were in Class 3 in these areas was estimated.

Around half of the students (52% girls; 46% boys) attended schools that were in or near a large town or city (see Exhibit 36). There were no significant differences between the number of girls and boys attending school in the four different locations. This is in contrast to the findings for Class 6 students, where girls were under-represented in rural areas (Routitsky, Stanyon, & Walker, 2015).

Exhibit 36: Percentage of Class 3 girls and boys in different locations



Mathematical and reading literacy of Class 3 urban and non-urban students

Analyses were also performed to compare the achievement of students in urban ('in or near a large town or city') and non-urban areas. This was done by considering the results for 'remote', 'rural' and 'in or near a small town' as one category: 'non-urban'.

Results from large-scale studies have shown that in many countries, students who go to schools in urban areas outperform their peers at schools in non-urban areas (see, for example, Mullis, Martin, Foy & Arora, 2012a; Mullis, Martin, Foy & Drucker, 2012b; OECD, 2013a; OECD, 2013b). In Afghanistan, this was found to be the case for Class 3 students in both reading and mathematics (see Exhibit 37).

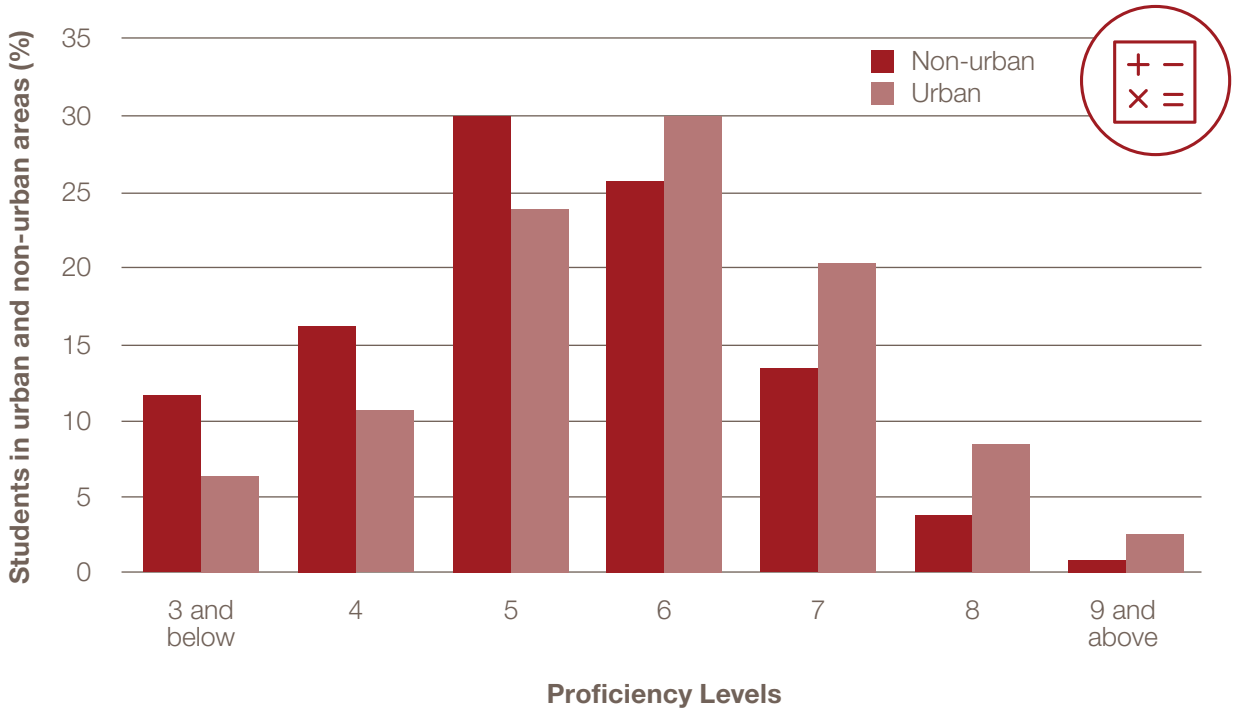
As previously discussed, it is important to note the likely influence of the resources available to both students and schools. For example, in Class 6, once the socioeconomic differences of the schools and students were taken into account, the differences in outcomes for students in urban and non-urban areas were no longer significant.

In mathematics, higher proportions of students from non-urban areas performed at the lower proficiency levels (Level 4 and Level 3 and below) and higher proportions of students from urban areas performed at the higher proficiency levels (Levels 7 and 8) (see Exhibit 38). There were no significant differences in the proportions of urban and non-urban students in proficiency Levels 5 and 6.

Exhibit 37: Mean achievement for Class 3 by school location

	Non-urban (Remote, rural, in or near a small town) (A)	Urban (In or near a large town or city) (B)	Difference Non-urban - Urban (A-B)	Statistical significance
Mean mathematics achievement	174	183	-9	∇
Mean reading achievement	180	188	-8	∇

Exhibit 38: Differences in mathematics proficiency levels by school location (Class 3)



Similarly, in reading there were higher proportions of students from non-urban areas in lower proficiency levels (Level 5 and Level 4 and below) and higher proportions of students from urban areas in higher proficiency levels (Levels 8 and 9) (see Exhibit 39). There were no significant differences in the proportions of urban and non-urban students in proficiency Levels 6 and 7.

As well as examining overall differences in achievement by location, analyses were performed to include gender differences in the comparison of results by location (see Exhibits 40 and 41).

The first area considered was the difference in achievement between girls and boys attending school in each of the location categories. In mathematical and reading literacy, girls and boys from urban areas performed similarly. There were also no significant differences between girls' and boys' performances in non-urban areas in either domain.

Another point of comparison was to consider the achievement of girls in urban compared to non-urban areas and the achievement of boys in each of the locations.

- Girls from urban areas outperformed girls from non-urban areas in both mathematical and reading literacy. For mathematical literacy, the difference was 9 MTEG scale points, about half a MTEG mathematics proficiency level. For reading literacy, the difference was 7 MTEG scale points, over half a MTEG reading proficiency level.
- Similarly, boys from urban areas outperformed boys from non-urban areas in both domains. For both domains, the differences between boys from urban and non-urban areas were similar to the differences between girls from these two locations. For mathematical literacy, the differences for boys from urban and non-urban areas was 10 MTEG scale points. For reading literacy, the differences for boys from urban and non-urban areas was 8 MTEG scale points.

The finding that urban students outperformed non-urban students in both mathematical and reading literacy, was not only the case overall, but also for both girls and boys.

Exhibit 39: Differences in reading proficiency levels by school location (Class 3)

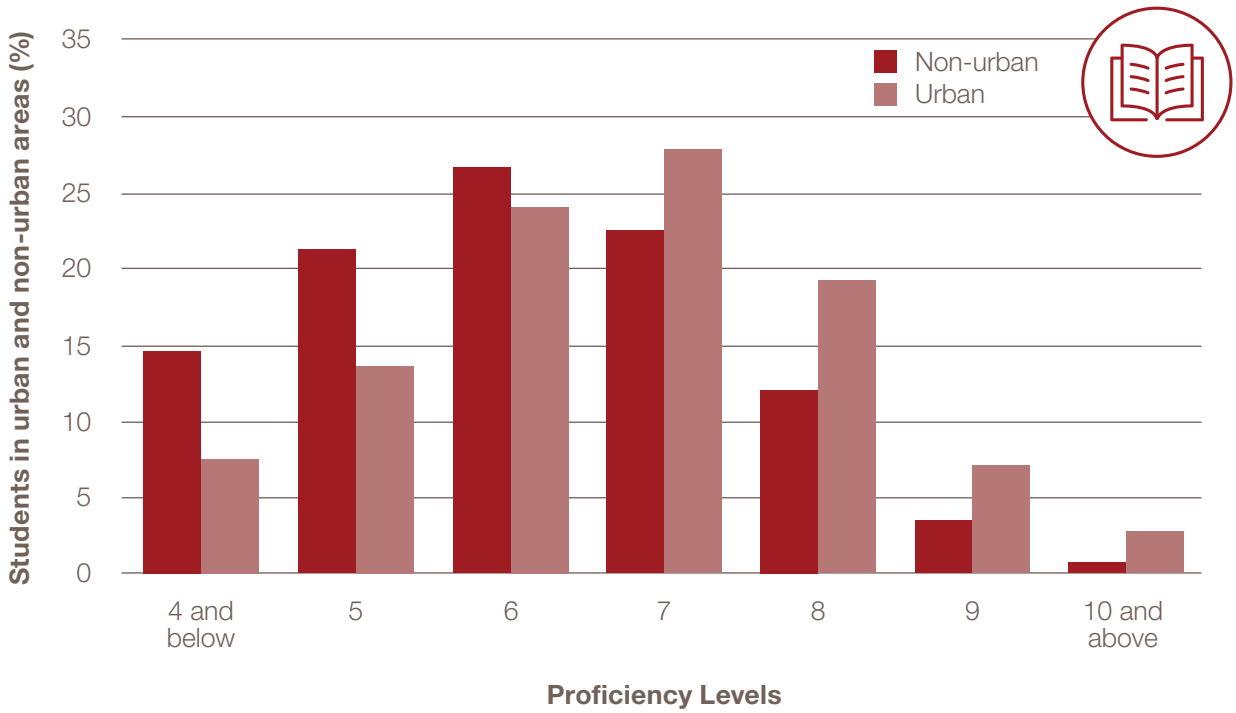


Exhibit 40: Mathematics achievement by gender and location (Class 3)

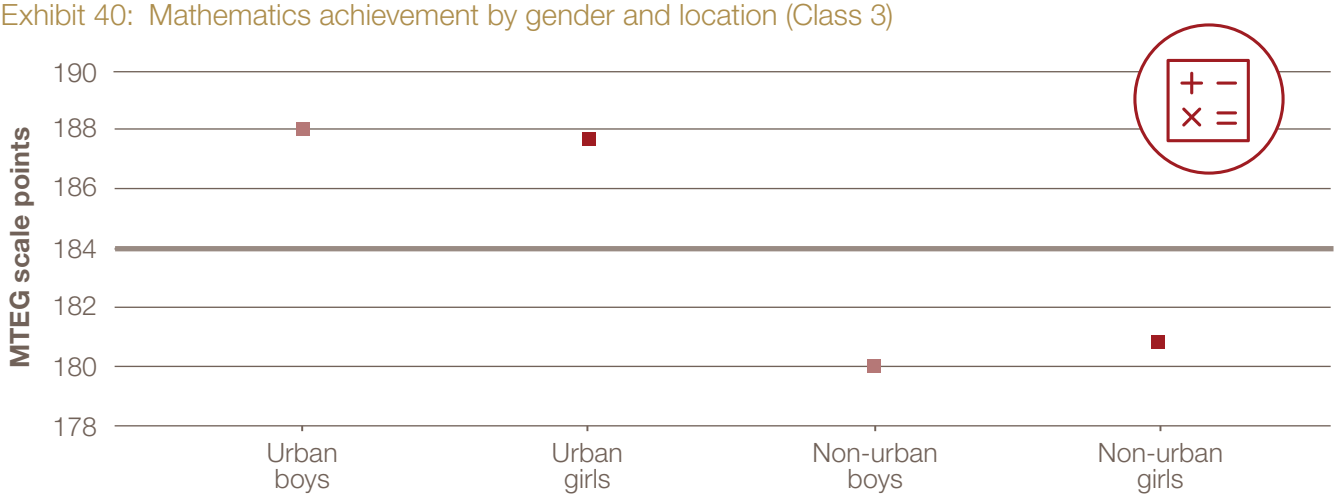
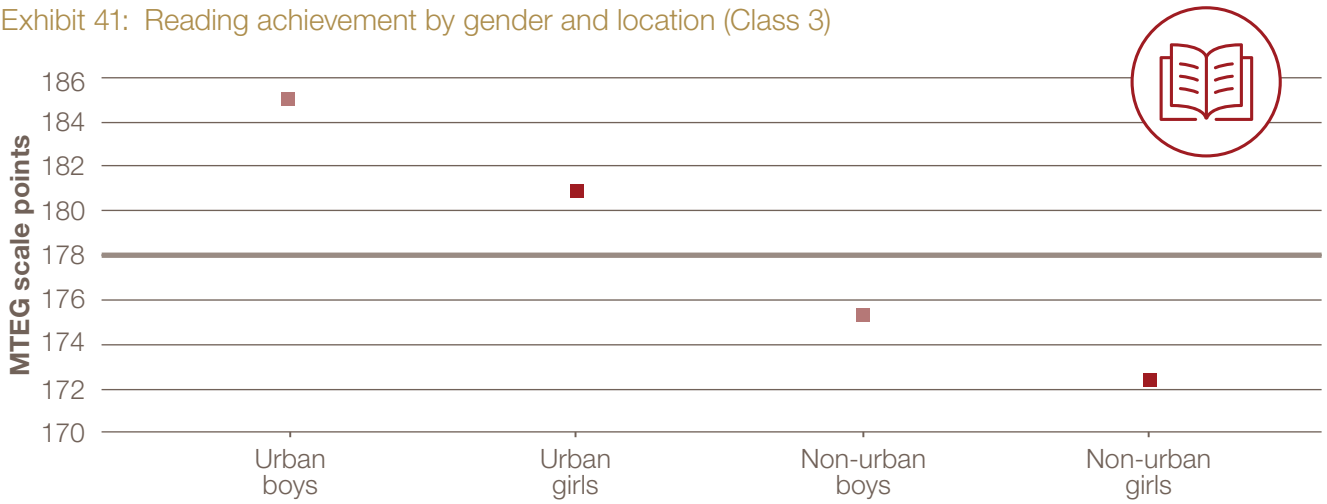


Exhibit 41: Reading achievement by gender and location (Class 3)



Class 3 proficiency: language of instruction

There was no statistically significant difference in mathematical or reading literacy achievement between students whose language of instruction at school was the same as their language spoken at home compared to students where these languages were different.

Students who were taught in Dari had higher achievement in mathematical and reading literacy compared to students who were taught in Pashto.

Students completed the MTEG assessment in the language of instruction at their school – either Pashto or Dari. In the student questionnaires, students were asked what their main language was spoken at home. Combining these two pieces of data, this showed that 85% of students received instruction at school in the same language as they speak at home.

Students were provided with the MTEG assessment in their language of instruction. The proportion of participating students tested in Dari was 67% with 33% of students tested in Pashto. Exhibit 42 shows the mean achievement of students based on whether their home language was, or was not, the same as the language of instruction at their school. For both mathematics and reading, there were no differences in achievement between students who were taught in the same language they spoke at home and those who were taught in a different language to that spoken at home.

Exhibit 43 shows the mean achievement of students from schools where Dari was the language of instruction and where Pashto was the language of instruction. For both mathematics and reading, students who were taught in Dari outperformed students who were taught in Pashto. For mathematical literacy, the difference was 9 MTEG scale points, over half a MTEG mathematics proficiency level. For reading literacy, the difference was 11 MTEG scale points, almost one MTEG reading proficiency level. However, it is important to consider what other factors might be associated with the difference in achievement between students schooled in Dari and those schooled in Pashto. For example, differences in socioeconomic status or proximity to urban centres may contribute to the observed differences in achievement.

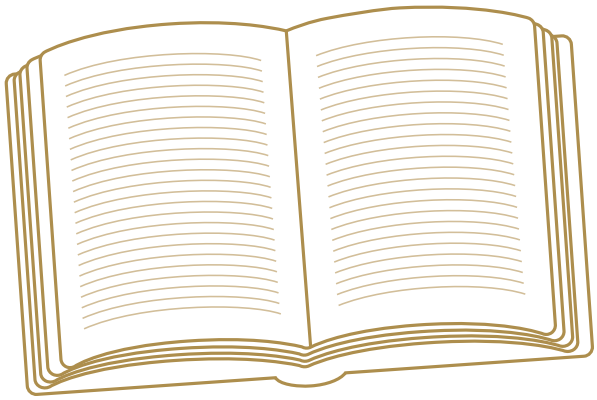
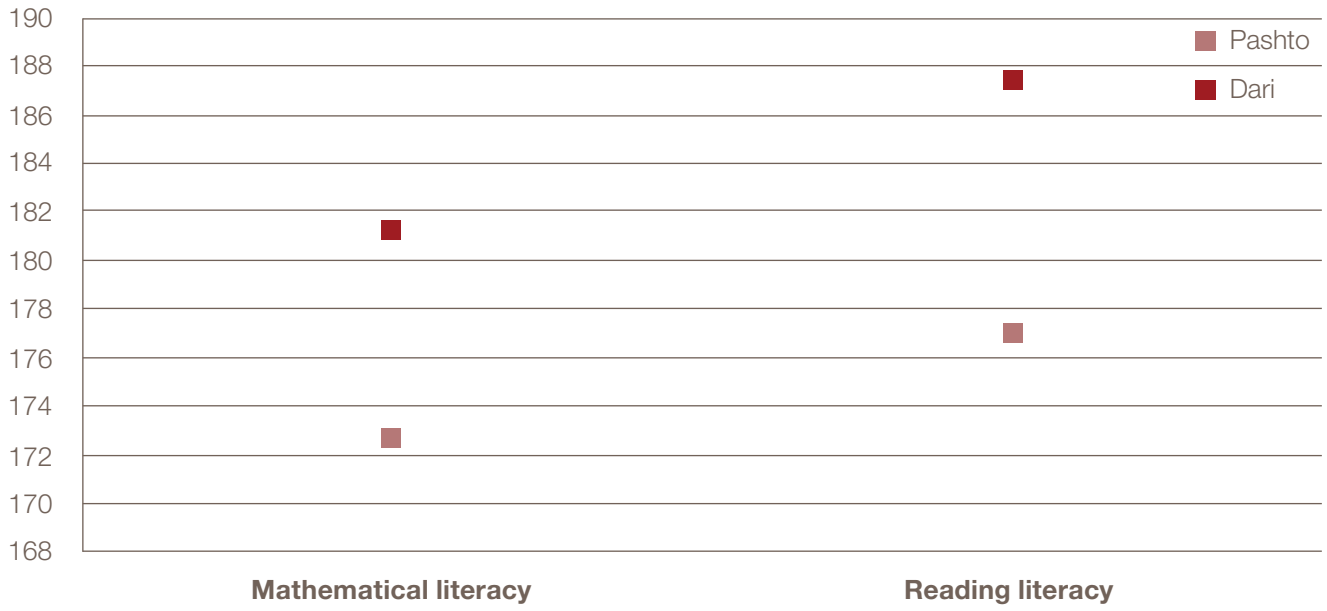


Exhibit 42: Mean achievement of Class 3 students by language of instruction and language spoken at home

	Main language spoken at home was the language of instruction at school (A)	Main language spoken at home was different to language of instruction at school (B)	Difference (A–B)	Statistical significance
Mean mathematics achievement	179	177	2	-
Mean reading achievement	184	183	1	-

Exhibit 43: Mean achievement of Class 3 students by language of instruction



Growth between Class 3 and Class 6 proficiency

Between Class 3 and Class 6, the mean score on the MTEG scale for mathematical literacy increased by over one MTEG mathematics proficiency level.

Students from non-urban areas experienced the greatest growth between Class 3 and Class 6 in mathematics. Students from non-urban areas had lower achievement levels than students from urban areas in Class 3. However, in Class 6 there was no significant difference in mathematical literacy achievement between students in urban and non-urban areas.

Boys and girls experienced similar levels of growth in mathematical literacy between Class 3 and Class 6.

Between Class 3 and Class 6, the mean score on the MTEG scale for reading literacy increased by over one MTEG reading proficiency level.

There were similar rates of growth in reading literacy between Class 3 to Class 6 for students from urban and non-urban areas. In both Class 3 and Class 6, students from urban areas demonstrated higher levels of reading literacy than those from non-urban areas.

Boys and girls experienced similar levels of growth in reading literacy between Class 3 and Class 6.

MTEG was designed to measure growth in achievement across a cohort of students. The growth between the classes is based on the assessment conducted in 2013 of Class 6 students and the 2015–16 assessment of Class 3 students.

The growth between Class 3 and 6 is calculated based on students that are currently in school. As noted in the NESP III 2017–2021 (Afghanistan Ministry of Education, 2016) there are high rates of school dropout in Afghanistan. The primary education dropout rate was 6% in 2013 (Afghanistan Ministry of Education, 2014). Therefore, it is important to note that the growth between Class 3 and Class 6 does not take into account the achievement levels of students that drop out of school.

Growth in mathematical literacy

Exhibit 44 shows the distribution of proficiency levels for Class 3 compared to Class 6 students in mathematical literacy. In mathematical literacy, a greater proportion of students in Class 3 compared to Class 6 were operating at proficiency Levels 6 and below (76% of Class 3 students and 37% of Class 6 students). A smaller proportion of Class 3 students compared to Class 6 students were operating at the higher proficiency levels, from Levels 7 and above (24% of Class 3 students and 63% of Class 6 students).

However, there was considerable overlap in the proficiency levels of the Class 3 and Class 6 in mathematics. In both Class 3 and Class 6, around half of students were performing at Levels 6 and 7 (44% of Class 3 and 54% of Class 6). In mathematics, the highest achievers in Class 3 were performing at a similar level to the higher achievers in Class 6. Similarly, the lowest achievers in Class 6 were performing at a similar level to the lower achievers in Class 3.

In Class 6, 86% of students were operating at proficiency Levels 6 and above, with 9% at Levels 9 and above. In Class 3, 51% were operating at proficiency Levels 6 and above, with 1% at Levels 9 and above. Students at Levels 6 and above are likely to be able to recognise common

shape names, and use spatial reasoning as part of a counting strategy or to make comparisons involving mathematical properties of objects.

For Class 6, the mean score on the MTEG scale for mathematical literacy was 200 (with a standard deviation of 20) and for Class 3 the mean score was 178 (with a standard deviation of 22). This represents a growth of 22 MTEG scale points, over one MTEG mathematics proficiency level between Classes 3 and 6. The average growth per class (Class 3-4, 4-5 and 5-6) was therefore just over 7 MTEG scale points.

In order to be able to describe the difference between the classes, an effect size was calculated. On average, the yearly effect size is 0.34 for mathematical literacy. That is, the average effect per Class was 0.34.

There is currently little known about the growth in performance across classes in countries neighbouring Afghanistan. However, information is available on the growth between students in Australia between similar class levels. The National Assessment Program – Literacy and Numeracy (NAPLAN) is an annual assessment of all Class 3, 5, 7 and 9 students in Australia. Based on the most recent assessment results from the 2016 assessment (Australian Curriculum, Assessment and Reporting Authority, 2016), the average annual effect size between Classes 3 and 5 is 0.63 and between Classes 5 and 7 is 0.40 for mathematics.

The MTEG effect sizes are similar to the growth rates seen between Classes 5 and 7 in NAPLAN. However, it is important to note that the effect size indicates the growth between classes, not the overall proficiency levels. In Afghanistan it is important to not only ensure that there is sufficient growth between the classes, but also to ensure that there are high levels of achievement in the early years to provide a strong foundation to build upon. It is also important to note that the growth rates provided are average growth rates for the cohort, and there are likely to be large variations in the rates of growth between students.

Exhibit 44: Distribution of Class 3 and Class 6 mathematical proficiency

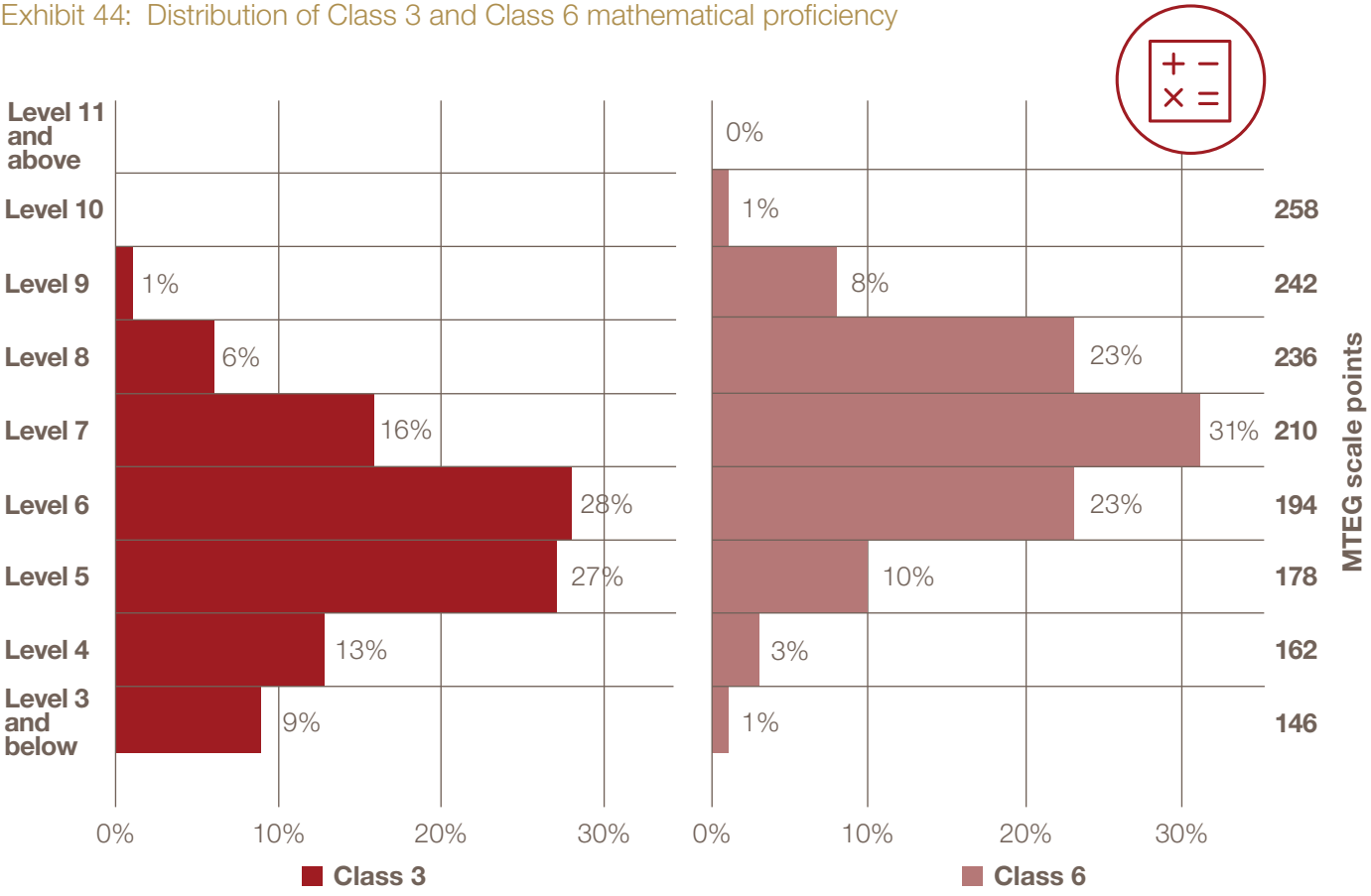
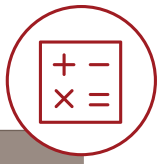


Exhibit 45 shows the growth in the mean score on the MTEG scale for mathematical literacy for girls and boys and for students from schools in urban and non-urban areas.

- There was no statistically significant difference between the growth in mathematical literacy between classes for girls and boys. That is, girls and boys experienced similar rates of growth between Class 3 and Class 6.
- The difference between the mean MTEG score for Class 3 compared to Class 6 was greater for non-urban compared to urban students. In Class 6 students attending schools in urban and non-urban settings performed at similar levels in mathematical literacy. However, Class 3 students from urban settings outperformed students from non-urban settings in mathematical literacy.

Exhibit 45: Mean achievement by gender and location in mathematical literacy (Class 3 and Class 6)



	Class 3 (A)	Class 6 (B)	Difference Class 6 - Class 3 (B-A)
All	178	200	22
Gender			
Girls	177	200	23
Boys	180	200	20
Location			
Urban	183	202	19
Non-urban	174	199	25

Growth in reading literacy

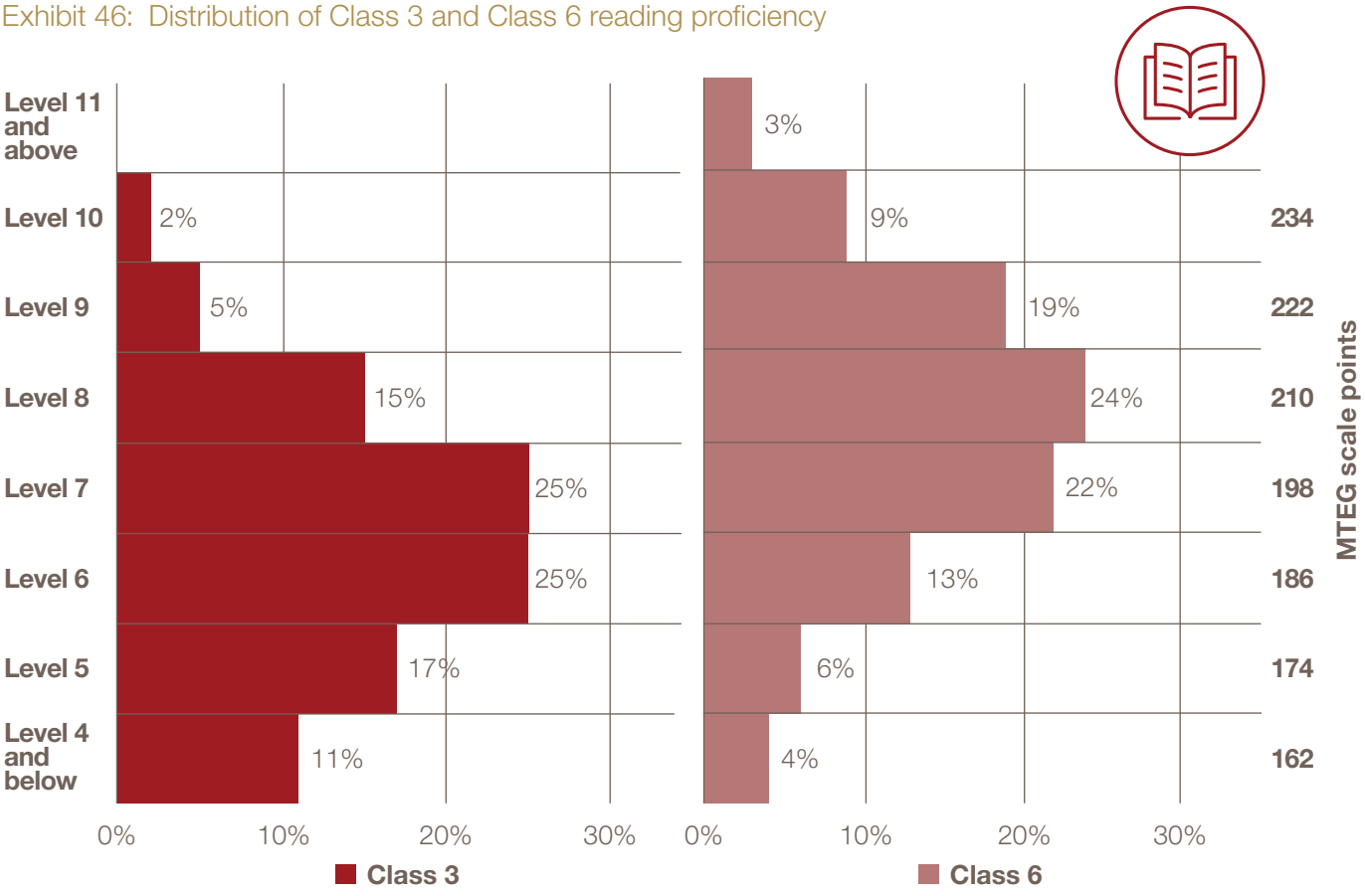
In reading literacy, a greater proportion of students in Class 3 compared to Class 6 were operating at proficiency Levels 7 and below (78% of Class 3 students and 45% of Class 6 students). A smaller proportion of Class 3 students compared to Class 6 students were operating at the higher proficiency levels, from Levels 8 and above (22% of Class 3 students and 55% of Class 6 students).

However, like mathematical literacy, there was considerable overlap in the proficiency levels of Class 3 and Class 6 in reading literacy. As is shown in Exhibit 46, over half of students in both Class 3 and Class 6, were performing at between Levels 6 and 8 (65% of Class 3 and 59% of Class 6). Similar to mathematics, in reading the highest achievers in Class 3 were performing at a similar level to the higher achievers in Class 6 and the lowest achievers in Class 6 were performing at a similar level to the lower achievers in Class 3.

In Class 6, 90% of students were at proficiency Levels 6 and above, meaning they were likely to be able to recognise the meaning of single sentences on familiar topics. In Class 3, 72% of students were at proficiency Levels 6 and above.

For Class 6, the mean score on the MTEG scale for reading literacy was 200 (with a standard deviation of 20) and for Class 3 the mean score was 184 (with a standard deviation of 18). This represents a growth of 16 MTEG scale points, over one MTEG reading proficiency level between Classes 3 and 6. The average growth per class (Class 3-4, 4-5 and 5-6) was therefore just over 5 MTEG scale points.

Exhibit 46: Distribution of Class 3 and Class 6 reading proficiency



In order to be able to measure the difference between the classes, an effect size was calculated. On average, the yearly effect size is 0.28 for reading literacy. That is, the average effect per Class was 0.28. Based on the most recent assessment results from the 2016 NAPLAN assessment in Australia (Australian Curriculum, Assessment and Reporting Authority, 2016), the average annual effect size between Classes 3 and 5 is 0.47 and between Classes 5 and 7 is 0.27 for reading. The MTEG effect sizes were similar to those seen between Classes 5 and 7 in NAPLAN. This indicates that the growth between classes in reading is similar for students in Afghanistan and Australia, however, these results do not provide information on the relative levels of achievement (as previously noted).

Exhibit 47 shows the growth in the mean score on the MTEG scale for reading literacy for girls and boys and for students from schools in urban and non-urban areas.

- There was no statistically significant difference between the growth in reading literacy between classes for girls and boys. That is, girls and boys experienced similar rates of growth between Class 3 and Class 6.
- There was no statistically significant difference between the growth in reading literacy between classes for students from urban and non-urban areas. In both Class 3 and Class 6, students attending schools in urban settings outperformed students from non-urban settings in reading literacy.

Exhibit 47: Mean achievement by gender and location in reading literacy (Class 3 and Class 6)

	Class 3 (A)	Class 6 (B)	Difference Class 6 - Class 3 (B-A)
All	184	200	16
Gender			
Girls	184	203	19
Boys	184	198	14
Location			
Urban	188	204	16
Non-urban	180	198	18

Concluding remarks

The focus of this report has been the mathematical and reading literacy of Class 3 students. It has also looked at the proficiency levels of different sub-groups of interest, including the outcomes of students of different ages, girls and boys, students taught in Pashto and Dari and students attending school in urban and non-urban areas.

The MTEG results on student achievement examined in this report provide an important baseline for Afghanistan to build upon. Policy makers, curriculum developers and teacher trainers can compare Class 3 results in 2015–16 with future Class 3 results.

Key findings from the Class 3 assessment

- A wide range of abilities is demonstrated by the Class 3 population in mathematical and reading literacy, with considerable overlap in the achievement levels of Class 3 and Class 6 students.
- About half of Class 3 students demonstrated 'basic proficiencies' in mathematics such as solving addition and subtraction problems involving numbers up to 20; and locating directly stated information from both written and aural texts in reading.
- The remaining Class 3 students in Afghanistan have not yet demonstrated these 'basic proficiencies' in mathematics and reading.
- Older students in Class 3 (those 10 years and older) performed better than younger students in mathematical and reading literacy.
- In mathematical literacy, boys performed significantly better than girls. Girls and boys performed at the same level in reading literacy.
- Overall, students from urban areas demonstrated higher levels of mathematical and reading literacy than those from non-urban areas. This may be due to the influence of socioeconomic factors.
- There was no statistically significant difference in mathematical or reading literacy achievement between students whose language of instruction was the same compared to students whose language of instruction was different to their main language spoken at home.
- Students who were taught in Dari had higher achievement in mathematical and reading literacy compared to students who were taught in Pashto. This may be due to the influence of socioeconomic factors or relative proximity to urban areas.

In the future, other background characteristics that may have associations with Class 3 students' learning outcomes could usefully be considered, including through multivariate analysis. The influence of background factors could then be compared to the findings for Class 6 students, as was discussed in the *Class 6 School Factors in Afghanistan 2013* (Friedman, Robertson, Templeton & Walker, 2016). In the future, an assessment of Class 9 students would reveal useful information on growth in educational outcomes from Class 3 through to Class 6 and on to Class 9

MTEG was designed to measure growth in achievement across a cohort of students. The results from the Class 3 assessment were placed on the same proficiency scales as the Class 6 results and were used to refine the MTEG described proficiency scales. The MTEG results provide information on growth in educational outcomes from Class 3 to Class 6.

The results show that:

- Between Class 3 and Class 6, the mean growth was over one MTEG mathematics proficiency level and one MTEG reading proficiency level.
- Girls and boys experienced similar levels of growth in mathematical literacy between Class 3 and Class 6. There were also no significant differences in the rates of growth across classes for girls compared to boys in reading literacy.

- Students from non-urban areas showed greater growth between Class 3 and Class 6 in mathematics compared to students from urban areas. There were similar rates of growth in reading literacy between the classes for students from urban and non-urban areas.

Little information is known about the rates of growth between classes of students in other countries in the region. Therefore, as a comparison, the average annual growth in proficiency between Class 3 and Class 6 in Afghanistan was compared to that of students in Australia using NAPLAN results. Students in Australia tended to experience a greater growth in both mathematics and reading achievement between Classes 3 and 5 compared to Classes 5 and 7. The average annual growth rate in Afghanistan between Class 3 and 6 in mathematics and reading was similar to the rates of growth seen between Classes 5 and 7 in Australia. However, this is different from comparing the proficiency levels of students in Afghanistan and Australia. It is important that in Afghanistan not only is there sufficient growth between the classes, but also that the proficiency levels of students in the early classes provide a strong starting point to build on. Another consideration is the spread of achievement and ensuring that all students are supported to reach the desired levels of proficiency.

As a point of reference, results from international studies on mathematics and reading in Class 4 have been examined alongside the Class 3 MTEG results. These international studies include results from TIMSS and PIRLS from the Islamic Republic of Iran, Kazakhstan and Azerbaijan. It appears that around half of Class 3 students in Afghanistan displayed skills in mathematics and reading that around two-thirds or more of students in Iran, Kazakhstan and Azerbaijan displayed.

A more direct comparison between other Class 3 populations in the region would be highly desirable and could help the establishment of appropriate benchmarks of proficiency for Class 3 in Afghanistan.

The setting of appropriate benchmarks usually involves a discussion between educational policy makers and academics. The development of the new curriculum that is currently underway in Afghanistan may assist in the setting of appropriate benchmarks for the different classes. The MTEG results reported here and in future reports can inform any benchmark setting exercise. Subsequent rounds of MTEG could report on progress towards benchmark goals.

Underlying the described proficiency levels of MTEG and other similar described proficiency scales is a conception of mathematical and reading literacy as continua of learning – beginning from early stages of schooling and developing across the class levels and even beyond school education. Given their continuous and wide-ranging nature, and their orientation towards authentic use of knowledge, these scales can be powerful tools for tracking student progress towards the attainment of a set of skills that enable them to participate fully both in education and in life beyond the classroom.

A large amount of how, and how much, children learn is directly in the hands of teachers. In fact, research shows that the quality of teaching has the biggest association with the quality of student learning of any identifiable variable (Hattie, 2009). This suggests that what is needed is a focus on the quality of teaching, both through policy and planning at the wider level, and through the professional practice of individual teachers in classrooms. Teaching should be targeted a little beyond students' current level of proficiency, as this is where the most effective instruction and learning are likely to take place.

It is hoped that this report, with its focus on what students know, understand and can do at different stages of development, will be of interest and use to teachers, teacher educators, and those working in the area of curriculum development in Afghanistan.

Appendix A: Delivery of assessment tasks for Class 3 students

The Class 3 assessments included several new delivery features that allowed greater interaction with the content and supported the ability to capture a wide range of data from the Class 3 students.

Feature 1: The test was created as an application to be downloaded onto a tablet-based device. This was in contrast to the traditional pen-and-paper format used for the Class 6 assessment. The digital format included several interactive features for the students as well as an efficient process for the collection process of response data.

Feature 2: Audio files were embedded into the majority of test items which allowed students to have instructions read aloud to them though headphones. This meant that small groups of students could undertake the assessment simultaneously rather than having one-to-one test administration. The audio files also made it possible for students who were not strong readers to demonstrate their mathematical abilities as test questions such as worded-problems were read aloud to them. Audio support also made the standardised testing of letter sounds, word recognition and listening comprehension possible in the reading assessment.

Feature 3: The tablet allowed students to touch and choose or move images, words and numbers on the screen through two types of response formats: 'hot spot', and 'drag and drop'. The examples in Exhibits 48 to 52 are from the pre-assessment practice tasks provided to students to allow them to familiarise themselves with the functionality. These are examples of navigation, not content. The hand in the screenshot illustrates how a student completes the different practice tasks.

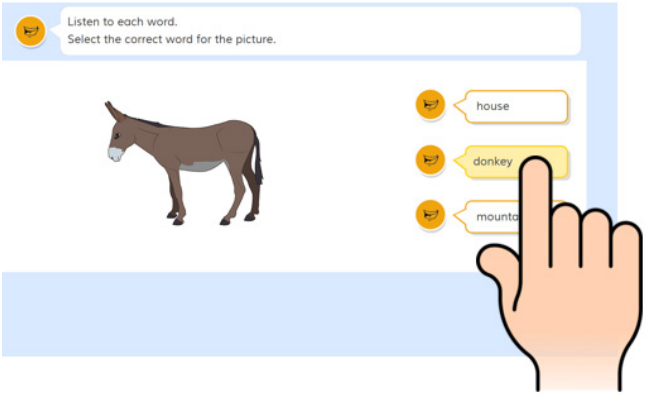
Feature 4: The narrative texts that were a component of assessing listening and reading comprehension were presented in an e-book style. This allowed the students to go through the story at their own pace (Exhibit 51) and then still to be able to access the e-book to answer the test items (Exhibit 52). This method is a more authentic measurement of reading literacy as it relies on comprehension rather than short-term memory recall of facts.

Touch responses (Hot spot and multiple choice)

Touch responses required the student to touch the screen to select their response. Responses could be with or without audio support (see Exhibit 48 and Exhibit 49).

Exhibit 48: Example hot spot task from practice tasks

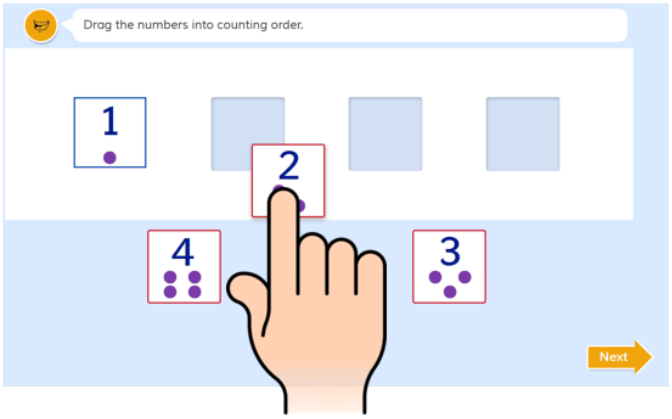
Exhibit 49: Example multiple choice task from practice tasks



Drag and drop

Drag and drop responses required the student to 'move' their responses into the correct zones. This was especially useful for items that assessed sequencing. Responses did not have audio support. See Exhibit 50 for an example of this type of task.

Exhibit 50: Example drag and drop task from practice tasks



Story tasks

Exhibits 50 and 51 provide examples of story tasks. In these examples students touch each page to start listening to the story and then touch the screen to select their response to the question.

Exhibit 51: Example story task from practice tasks

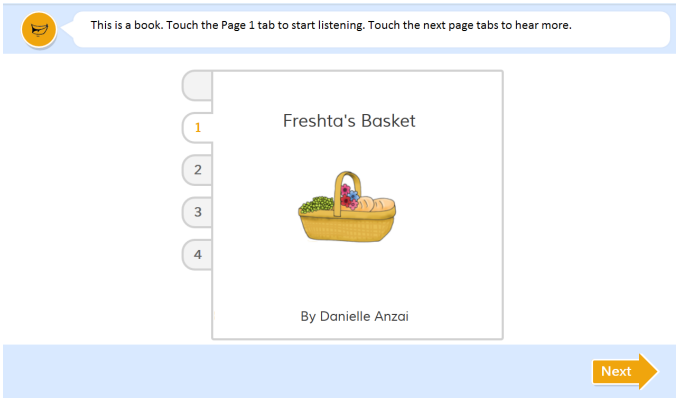
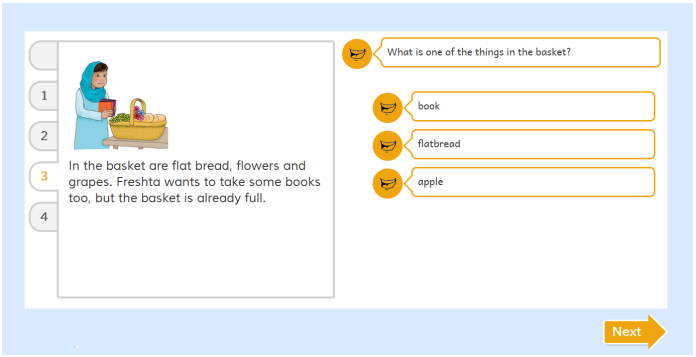


Exhibit 52: Example story task 2 from practice tasks



Appendix B: Main assessment framework variables for Class 3

Literacy	Context	Process	Content
Mathematical literacy	Personal Local Intra-mathematical	Translate Apply Interpret and review	Number and algebra Measurement and geometry Chance and data
Reading literacy	Personal Local Wider world	Locate Interpret Reflect Recognise words Phonics and phonemes	Text format: • Continuous • Composite Text type: • Narrative • Descriptive • Label

Appendix C: Class 6 mathematical literacy scale

Exhibit 53 is a description of the proficiency scale developed for mathematics after the Class 6 assessment[21]. Examples are items from the Class 6 assessment. Exhibit 54 presents the scale with illustrated items.

Exhibit 53: Proficiency descriptions for mathematics (Class 6)

Level and examples	Proficiency description
Level 11 and above (259 and above) eg Teapot (full credit), 12-sided shape (full credit) Class 6 students at this level: 0%	Students at this level typically have highly developed reasoning and strategic thinking skills; they can flexibly use different mathematical representations, and they can apply a range of mathematical skills and knowledge to solve problems involving multiple steps set in a variety of contexts.
Level 10 (242 to less than 259) eg Buying walnuts, Carpet turn Class 6 students at this level: 1%	Students at this level can typically understand and use a range of mathematical tools, language, and techniques to solve problems where relationships among problem elements are central and they can apply the required reasoning steps to plan and follow straight-forward sequential processes.
Level 9 (226 to less than 242) eg Mass of apple, Population of Afghanistan, Teapot (partial credit) Class 6 students at this level: 8%	Students at this level can typically understand important mathematical terms and processes and are able to carry out linked calculations that involve a number of steps. Their abstract reasoning skills are developing; they show fluency with calculations involving 1-digit and 2-digit numbers and those involving time; and they can work with data in tables and graph form.
Level 8 (210 to less than 226) eg Three cans, Mount Noshaq, 12-sided shape (partial credit) Class 6 students at this level: 23%	Students at this level can typically interpret information presented in text form, and relate it to graphs or diagrams; they can work with basic mathematical properties of objects; they can successfully complete calculations of different kinds that involve tractable numbers; and they can interpret and use mathematical concepts expressed in relational language.
Level 7 (194 to less than 210) eg Pomegranates, 13x6, Team Games Q2 Class 6 students at this level: 31%	Students at this level can typically perform basic arithmetic operations; they can interpret text describing a familiar situation involving mathematical ideas, formulate an appropriate calculation and solve it; and they can interpret and use standard graphical representations of data and of relative quantities.
Level 6 (178 to less than 194) eg Bales of cotton Class 6 students at this level: 23%	Students at this level can typically recognise common shape names, and they can use spatial reasoning as part of a counting strategy or to make comparisons involving mathematical properties of objects.
Level 5 and below (less than 178) eg Team Games Q1 Class 6 students at Level 5 and below: 14%	Below the lowest level currently described: there were insufficient items at this level in the Class 6 test to create a general description.

21 In some mathematical and reading literacy tasks, 'partial credit' marking is used, with fully satisfactory responses given full credit (a score of 2), and partially successful responses given 'partial credit' (a score of 1). These categories of credit appear at different locations on the scale.

Exhibit 54: Graphic representation of illustrated mathematics scale (Class 6)

Level 11 and above

Teapot

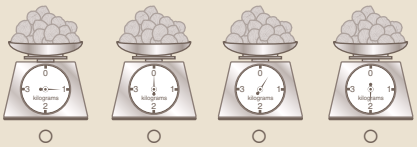
A teapot serves six glasses of tea.
One glass of tea is 200 millilitres.
What is the capacity of the teapot in **litres**?
Show your working.

☐ litres

Level 10

Buying Walnuts

Which set of scales shows 400 grams of walnuts?



○ ○ ○ ○

Level 9

Mass of Apple

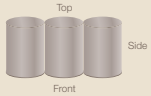
Najia buys 7 apples.
They have a mass of 850 grams altogether.
What is the approximate mass of one apple?

○ about 12 grams
○ about 80 grams
○ about 120 grams
○ about 600 grams

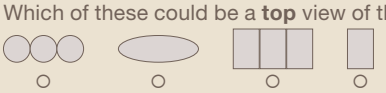
Level 8

Three Cans

These 3 cans are side by side on a shelf.



Which of these could be a **top** view of the 3 cans?



○ ○ ○ ○

Level 7

Pomegranates

Which of these shows how to work out how many pomegranates there are?

○ 4 + 3
○ 3 + 3 + 3
○ 4 ÷ 3
○ 4 × 3

13 × 6 = ?

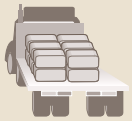
○ 68
○ 78
○ 603
○ 618

Level 6

Bales of Cotton

This is one bale of cotton. 
Some bales are stacked on a truck.
How many bales are there on the truck?

○ 10
○ 11
○ 12
○ 16



Level 5 and below

Team Games

The red team and the blue team played a game.
Here is the ball they played with.
What shape is this ball?

○ It is a cylinder.
○ It is a sphere.
○ It is a cube.
○ It is a pyramid.

Appendix D: Class 6 reading literacy scale

Exhibit 55 is a description of the proficiency scale developed for reading after the Class 6 assessment. Examples are items from the Class 6 assessment. Exhibit 56 presents the scale with illustrated items[22].

Exhibit 55: Proficiency descriptions for reading (Class 6)

Level and examples	Proficiency description
Level 11 and above (234 and above) eg The Hole Q2 (full credit) Class 6 students at this level: 3%	Students at this level are typically able to explain the behaviour and emotions of characters, even when they are not stated directly; and, they can combine several pieces of information and deal with distracting information in texts of several hundred words on a variety of familiar topics (family, school or local community) including narratives and persuasive texts.
Level 10 (222 to less than 234) eg Country Fact File Q4, The Hole Q2 (partial credit) Class 6 students at this level: 9%	Students at this level are typically able to identify the main message and clearly stated details, even when they are not in a prominent position, in short texts on familiar topics. These texts include narratives and letters, and information presented in tables.
Level 9 (210 to less than 222) eg The Hole Q8, Country Fact File Q3 & Q8 Class 6 students at this level: 19%	Students at this level are typically able to identify one or two pieces of explicitly stated information from different parts of texts on familiar topics, where there is strong support in the text such as illustrations, or where the information is in a prominent position, such as at the beginning of the text.
Level 8 (198 to less than 210) eg The Hole Q6 Class 6 students at this level: 24%	Students at this level are typically able to identify directly stated information in short texts on familiar topics such as family or school, or a longer text with strong support given in the task (such as a key word from the text); and they can recognise information about concrete objects or well-known things such as animals.
Level 7 (186 to less than 198) Class 6 students at this level: 22%	Students at this level are typically able to recognise simple details, explicitly stated, in a very short text such as a note to a relative; and they can identify the message of a narrative, supported by repetition in the text.
Level 6 (174 to less than 186) Class 6 students at this level: 13%	Students at this level are typically able to recognise the meaning of single sentences on familiar topics and they can match one of four given words to a simple illustration of a familiar object, where the other three words may have similarities to the target word in meaning or graphic appearance.
Level 5 (162 to less than 174) eg Wheel Class 6 students at this level: 6%	Students at this level are typically able to match one of four given words to a simple illustration of a single highly familiar object, where the task is simple, direct and repetitive, and the other three words are unlike the target word in both meaning and graphic appearance.
Level 4 and below (less than 162) eg Gloves Class 6 students at Level 4 and below: 4%	Below the lowest level currently described: there were insufficient items at this level in the Class 6 test to create a general description.

22 Examples are items from the Class 6 assessment. Due to the limited number of publicly available items, examples cannot be given for all levels.

Exhibit 56: Graphic representation of illustrated reading scale (Class 6)

Level 11 and above

Why does Samsur refuse to climb down into the hole?

Interpret the reason for a character's refusal to climb down into a hole.
Question type: constructed response
(Text: a medium-length narrative about a children's adventure)

Level 10

According to the text, which country exports the same goods as Afghanistan?

Question type: constructed response
(Text: a table of facts about countries)

Level 9

Which country has an unusual bird?

- Afghanistan
- Vietnam
- Philippines
- Nepal

(Text: a table of facts about countries)

Level 8

Which word best describes Nazneen?

- clever
- scared
- excited
- greedy

(Text: a medium-length narrative about a children's adventure)

Level 7

Level 6

Level 5

(Select the word which matches the picture.)

- Car
- Shoe
- Wheel
- Goat

Level 4 and below

(Select the word which matches the picture.)

- Gloves
- Grapes
- Girl
- Road

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