

TIMSS 2019

School Report



The Indian Academy



TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

TIMSS

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What is TIMSS?

Trends in International Mathematics and Science Study (TIMSS) is an international assessment of student achievement in mathematics and science at fourth and eighth grades. 64 countries and 8 regional entities (e.g. Madrid, Spain, Quebec, Canada) participated in the TIMSS 2019 cycle. TIMSS 2019 was the seventh cycle of TIMSS. For the first time, participating countries had the option of administering the assessment in digital format, the eTIMSS version. This was Dubai's fourth consecutive participation in TIMSS, the first time being in the 2007 cycle.

In 2019, Dubai chose to administer TIMSS 2019 in the digital format. 7265 Grade 4 students from 199 schools and 5728 Grade 8 students from 163 schools across various curricula participated. The average student score was above the international mean. Schools in Dubai are highly diverse in terms of the curriculum, with more than ten different, international curricula in operation. Considerable variation was found in student achievement across schools offering different curricula.

This report summarises the performance of students in selected class(es) at your school who sat for the TIMSS 2019 assessments. The overall results from TIMSS provide very useful information for school leaders. Information on achievement of students, in key areas of learning, is central to the systematic inspection process in Dubai. Leaders can use the school level reports to study strengths and weaknesses in the achievement of their students in mathematics and science.

They are also able to compare the achievement of participating students in their own school with international benchmarks. Additionally, leaders can compare the achievement of their own students with that of students in other schools in Dubai and more specifically, other schools in Dubai following a similar curriculum.

This detailed assessment helps school leaders and teachers to better align the content of lessons and the broader curriculum to the identified needs of students in the school. Inspectors will have the school level information prior to each inspection and will evaluate the success of school leaders in using the data provided in this report to match the curriculum and class activities to the learning needs of students in the school. The inspectors' judgements about students' attainment and progress, assessment, leadership and self-evaluation will be informed by each school's effective usage of TIMSS data, as well as other student achievement data.

UAE VISION 2021: First Rate Education

The UAE Vision 2021 was launched by H.H. Sheikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai in 2014. Its pillars have been mapped into six national priorities which represent the key focus sectors of government action in the subsequent years. One of these six priorities is related to education and is called "First Rate Education". Below are the indicators and targets that all education stakeholders must achieve.

Education Indicators & Targets

There are eight education related indicators and targets, two of which are related to international assessments. This report focuses on TIMSS

Index	INDICATOR	TARGET
1	Average TIMSS Score	Among the top 15 countries
2	Average PISA Score	Among the top 20 countries
3	Upper Secondary Graduation Rate	98%
4	Enrollment Rate in Preschools (public and private)	95%
5	% of Students with High Skills in Arabic	90%
6	% of Schools with High Quality Teachers	100%
7	% of Schools with Highly Effective School Leadership	100%
8	Enrollment Rate in Foundation Year	0%



Your TIMSS Targets

In order to work towards achieving TIMSS targets in the UAE National Agenda, and based upon the TIMSS results for each school in 2015, KHDA set individual targets for all private schools in Dubai.

The table below shows the performance of your participating students in TIMSS 2019 against KHDA's set targets for your school.

2019 Performance against set targets	Grade 4		Grade 8	
	Mathematics	Science	Mathematics	Science
Your TIMSS 2019 Target Scores based on 2015 results	610	594	512	522
Actual TIMSS 2019 Scores	523	518	516	553

Using TIMSS 2019 results, every school now receives a new target for moving to the next achievement level in each TIMSS domain. These are described in the table below. The individual targets are ambitious yet attainable for all schools.

Your School New 2023 targets				
Grade	Grade 4		Grade 8	
Subject	Mathematics	Science	Mathematics	Science
TIMSS 2023 Target Range	538 - 543	533 - 538	531-536	558-568

KHDA continues to monitor each school's performance against their National Agenda targets through school inspections. In 2015, KHDA launched the National Agenda Parameter (N.A.P), which is a method for measuring and monitoring schools' progress towards achieving their individual National Agenda targets, through the use of external benchmark tests.

Inspectors evaluate:

- The quality of data analysis received from N.A.P and the use of it to impact on education.
- The extent to which schools have modified their curriculum to address shortfalls, and how teaching methods have been adapted to engage students in aspects of their learning that are in need of improvement (e.g. critical thinking or problem solving).
- The validity of each school's assessment methods so that progress towards targets can be accurately and reliably measured.
- The progress students are making towards targets in mathematics, reading and science - the differences in the progress of girls and boys and between Emirati and expatriate students.

The Indian Academy

Summary

School Profile:



School Type	Private
School Curriculum	Indian
Location	Dubai
Number of Students Assessed in Grade 4	40
Number of Students Assessed in Grade 8	17








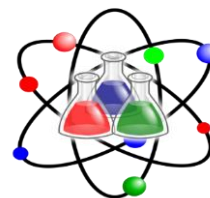
Selecting students at your school

The students' sample selection process occurred through two phases to assure the representation of the schools sample and the accuracy of the data. Students were sampled using an advanced statistical technique to ensure representative sampling in each of the relevant curricula. The sampling was overseen by the International Association for the Evaluation of Educational Achievement (IEA) to maintain strict adherence. The basic design for the TIMSS sample is referred to as a two-stage stratified cluster sample design. The first stage consisted of establishing a sample of schools. The second stage consisted of classes (mathematics or science) selected at random from the target grade levels (4 or 8) in the sampled schools. The students in the selected classes were representative of the students in the population and weightings were used to adjust for any differences arising from intended features of the design (e.g. to over-sample minorities) or non-participation by students who were selected. In this way, measures of achievement could be provided for the population, based on the responses of a sample of students, along with the confidence interval to indicate the precision of those measures.

Overall Performance of your School's Participating Students

	Grade	Math	Benchmark
 mathematics	Grade 4	523	Intermediate International Benchmark
	Grade 8	516	Intermediate International Benchmark
	Grade	Science	Benchmark
 science	Grade 4	518	Intermediate International Benchmark
	Grade 8	553	High International Benchmark

	Advanced International Benchmark
	High International Benchmark
	Intermediate International Benchmark
	Low International Benchmarking
	Below Low International Benchmarking



How well did your students achieve compared to their peers in Dubai?

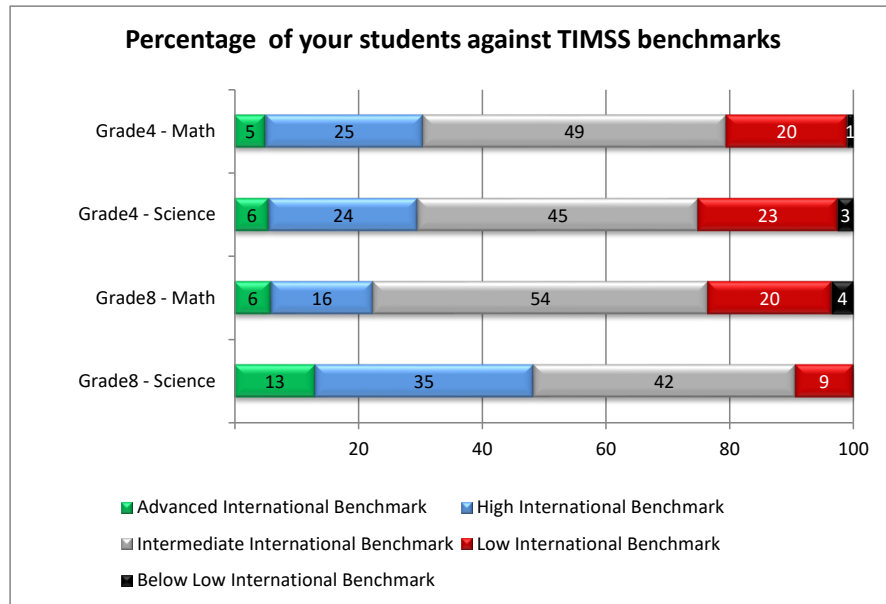
Compared To		Grade 4		Grade 8	
		Math	Science	Math	Science
All Private Schools Participating in Dubai	Average Score	550	550	553	566
		Significantly higher than TIMSS center-point	Significantly higher than TIMSS center-point	Significantly higher than TIMSS center-point	Significantly higher than TIMSS center-point
Your School	Average Score	523	518	516	553
		Significantly Higher than TIMSS center-point	Significantly Higher than TIMSS center-point	Significantly Higher than TIMSS center-point	Significantly Higher than TIMSS center-point

Performance of students in different curricula offered in Dubai

Curriculum	Grade 4 Math	Grade 4 Science	Grade 8 Math	Grade 4 Science
Private - SABIS	590	584	594	609
Private - UK	565	564	566	579
Private - Indian	562	568	580	598
Private - IB	554	548	557	560
Private - Canadian	464	476	503	527
Private - US	507	500	511	517
Private - Philippine	517	535	521	547
Private - MoE	495	502	490	500
Private - Pakistani	488	481	489	495

How well did your students achieve against TIMSS International Benchmarks?

This chart shows the distribution of your students across each of the International Benchmark Levels. The chart indicates the percentage of students who have reached achievement levels at every benchmark.



*The total values might not add up to 100% due to rounding

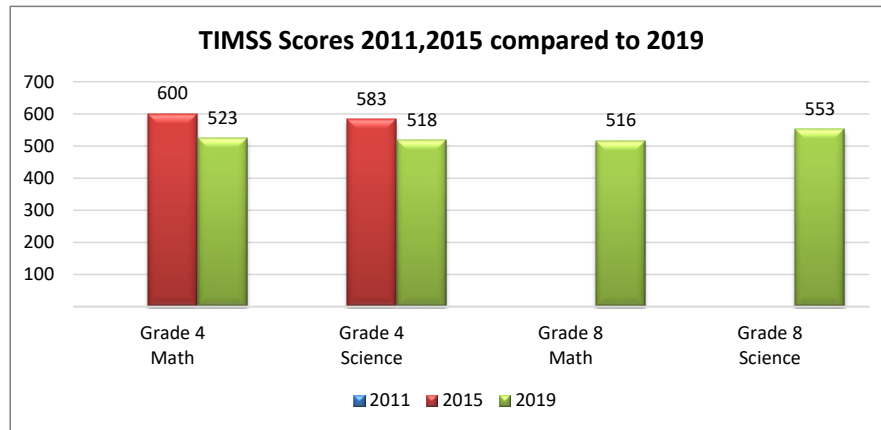
TIMSS International Benchmarks

Benchmark Level	Benchmark threshold
Advanced International Benchmark	625
High International Benchmark	550
Centre-point (average scale)	500
Intermediate International Benchmark	475
Low International Benchmark	400

* Please refer to the Appendix for full descriptions of the international benchmarks

Change Over Time

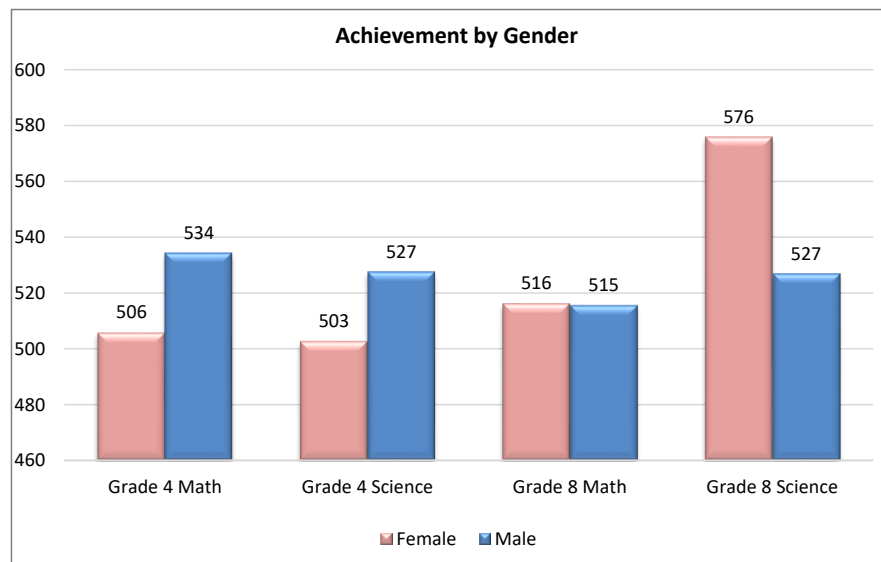
The chart below compares your students' scores in the last three cycles of TIMSS



How does achievement at your school vary by gender?

This bar chart indicates the performance of female and male who took part in TIMSS 2019

Gender	Female students	Male students
Number of students in Grade 4	15	25
Number of students in Grade 8	9	8



Achievement in the Content and Cognitive Domains

TIMSS student achievement results can be broken down into achievement by either content or cognitive domains. The content domains are three subject matter domains while cognitive domains are sets of skills required across different content domains in TIMSS. The content and the cognitive domains are accordingly designed and distributed as follows:

Mathematics Content Domains

Grade 4	Topic areas	Domain %	Grade 8	Topic areas	Domain %
Number	<ul style="list-style-type: none"> Whole numbers Fractions and decimals Number sentences with whole numbers Patterns and relationships 	50%	Number	<ul style="list-style-type: none"> Whole numbers Fractions and decimals Integers Ratio, proportion and percent 	30%
Geometric Shapes and Measures	<ul style="list-style-type: none"> Points, lines and angles Two-and three-dimensional shapes 	35%	Algebra	<ul style="list-style-type: none"> Patterns Algebraic expressions Equations/formulas and functions 	30%
Data Display	<ul style="list-style-type: none"> Reading and interpreting Organizing and representing 	15%	Geometry	<ul style="list-style-type: none"> Geometric shapes Geometric measurement Location and movement 	20%
			Data and Chance	<ul style="list-style-type: none"> Data organisation and representation Data interpretation Chance 	20%

Mathematics Cognitive Domains

Domains	Grade 4	Grade 8
Knowing	40%	35%
Applying	40%	40%
Reasoning	20%	25%

Science Content Domains

Grade 4	Topic areas	Domain %	Grade 8	Topic areas	Domain %
Life Science	<ul style="list-style-type: none"> • Characteristics and life process of living things • Interaction with the environment • Ecosystems • Human health 	45%	Biology	<ul style="list-style-type: none"> • Characteristics classification, and life processes of organisms • Cells and their functions • Life cycles, reproduction, and heredity • Diversity, adaptation, and natural selection • Ecosystems • Human Health 	35%
Physical Science	<ul style="list-style-type: none"> • Classification and properties of matter • Forces and motion • Sources and effects of energy 	35%	Chemistry	<ul style="list-style-type: none"> • Classification and composition of matter • Properties of matter • Chemical Change 	20%
Earth Science	<ul style="list-style-type: none"> • Earth's Structure, physical characteristics and resources • Earth's processes, cycles, and history • Earth in the solar system 	20%	Physics	<ul style="list-style-type: none"> • Physical states and changes in matter • Energy transformations, heat, and temperature • Light and sound • Electricity and magnetism • Forces and motion 	25%
			Earth Science	<ul style="list-style-type: none"> • Earth's structure and physical features • Earth's processes, cycles, and history • Earth's resources, their use and conservation • Earth in the solar system and the universe 	20%

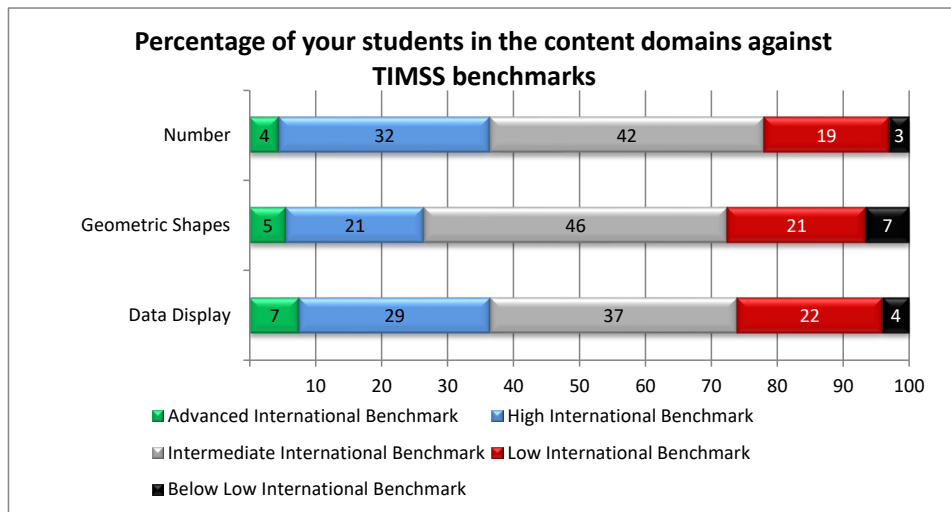
Science Cognitive Domains

Domains	Grade 4	Grade 8
Knowing	40%	35%
Applying	40%	35%
Reasoning	20%	30%

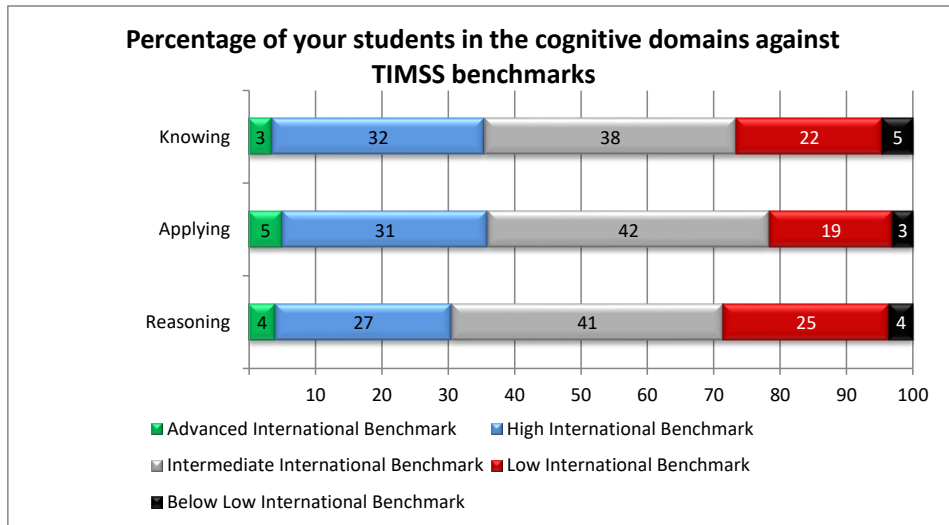
How well did your students achieve in each of the Content and Cognitive Domains?

Grade 4 - Mathematics

TIMSS	Content Domain			Cognitive Domain		
Grade 4	Number	Geometric Shapes	Data Display	Knowing	Applying	Reasoning
Average score of your students	528	509	524	522	527	516
Overall average of Dubai private schools	554	541	554	549	554	545



*The total values might not add up to 100% due to rounding

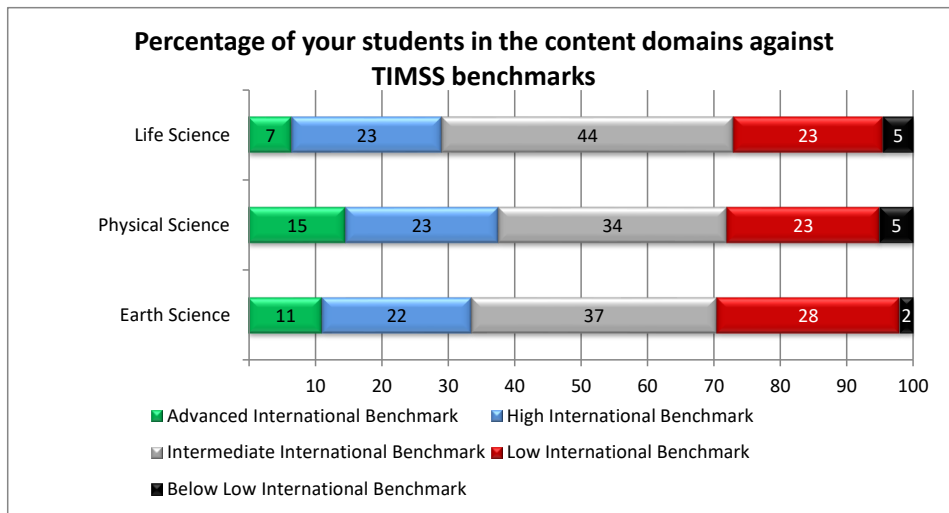


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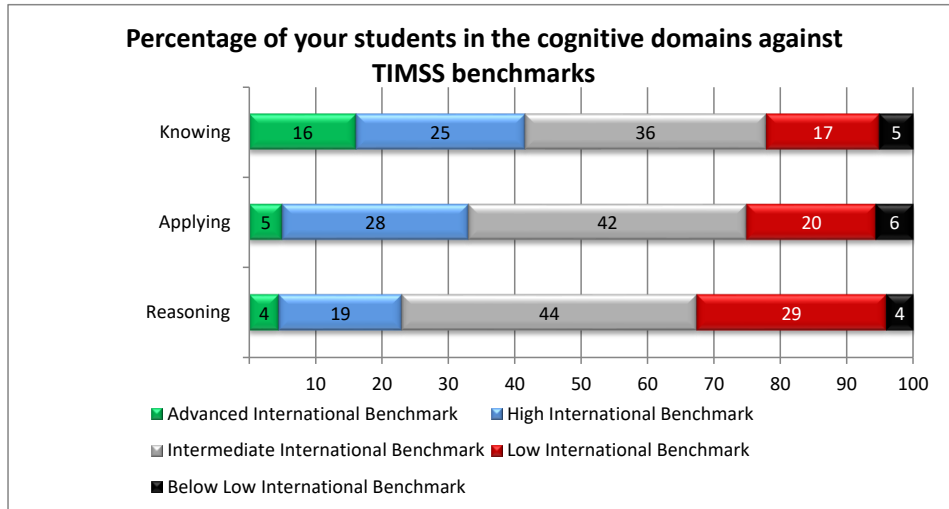
How well did your students achieve in each of the Content and Cognitive Domains?

Grade 4 - Science

TIMSS	Content Domain			Cognitive Domain		
Grade 4	Life Science	Physical Science	Earth Science	Knowing	Applying	Reasoning
Average score of your students	515	530	523	538	517	506
Overall average of Dubai private schools	543	561	548	567	546	538



*The total values might not add up to 100% due to rounding

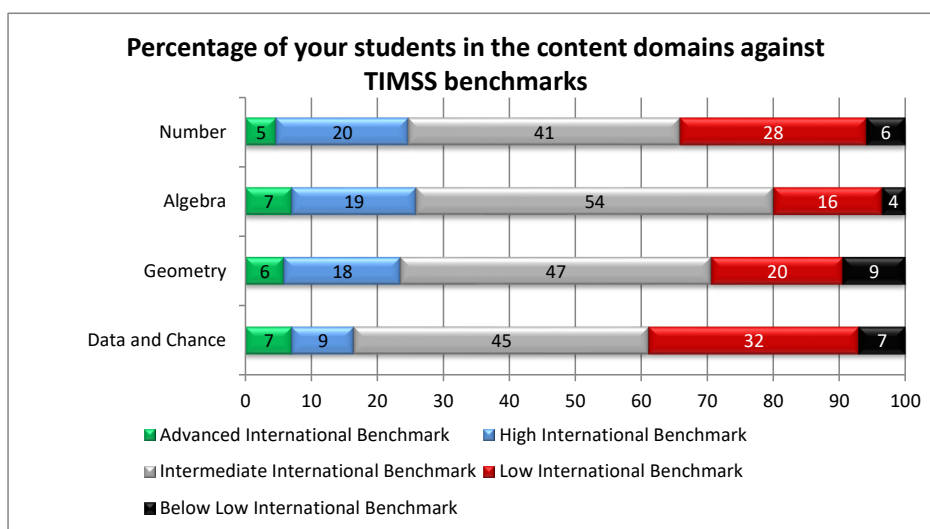


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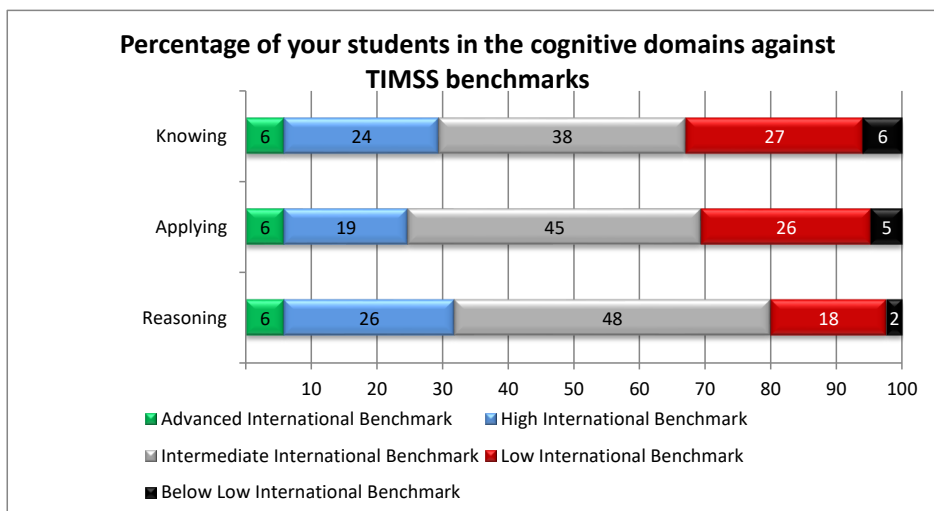
How well did your students achieve in each of the Content and Cognitive Domains?

Grade 8 - Mathematics

TIMSS	Content Domain				Cognitive Domain		
Grade 8	Number	Algebra	Geometry	Data and Probability	Knowing	Applying	Reasoning
Average score of your students	506	519	501	495	513	510	524
Overall average of Dubai private schools	553	563	543	544	556	549	557



*The total values might not add up to 100% due to rounding

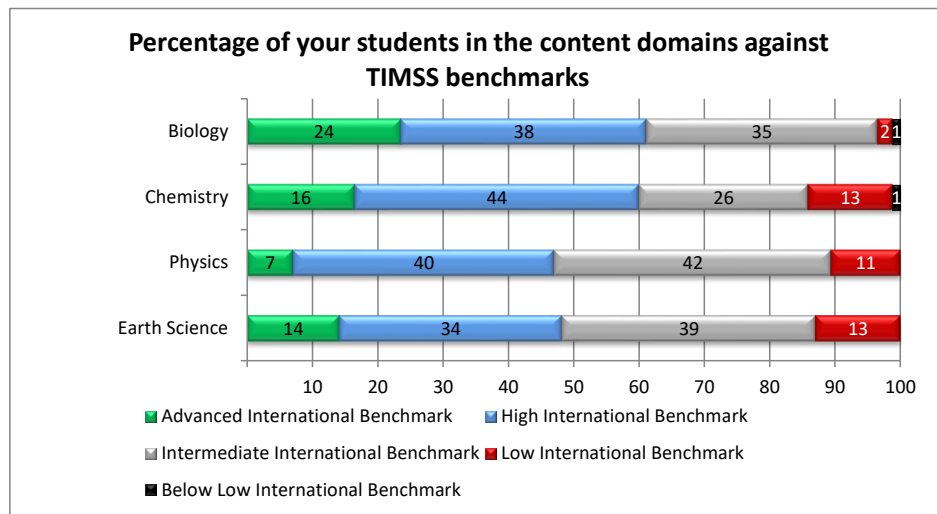


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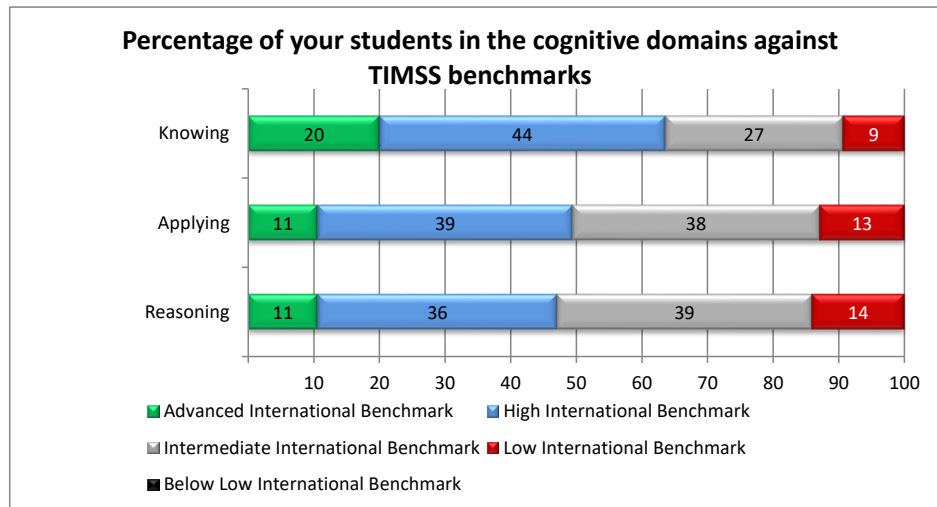
How well did your students achieve in each of the Content and Cognitive Domains?

Grade 8 - Science

TIMSS	Content Domain				Cognitive Domain		
Grade 8	Biology	Chemistry	Physics	Earth Science	Knowing	Applying	Reasoning
Average score of your students	572	558	544	549	571	571	571
Overall average of Dubai private schools	572	572	557	556	579	562	557



*The total values might not add up to 100% due to rounding



*The total values might not add up to 100% due to rounding

The performance of Emirati students in your school

The standards of achievement of Emirati students is a very high priority for KHDA. The table below outlines the difference in achievement between Emiratis and expatriate students in your school.

As KHDA continues to prioritise improving the knowledge acquisition and skills development of Emirati students, it is important for schools to work towards improving the overall academic performance of this cohort by identifying ways to improve their levels of achievement in all domains.

Through strategic evaluation and planning and subsequent adaptations to the curriculum and pedagogy, schools must make provision to ensure that Emirati and expatriate students alike go on to make the highest levels of progress in mathematics and science.

Grade 4

Nationality	Overall Score in Mathematics	Overall Score in Science
Emirati students in your school		
Expatriates students in your school		
Emirati students in private Schools	493	486
2023 TIMSS Dubai Target Scores for Emirati Students	513 - 518	506 - 511

Grade 8

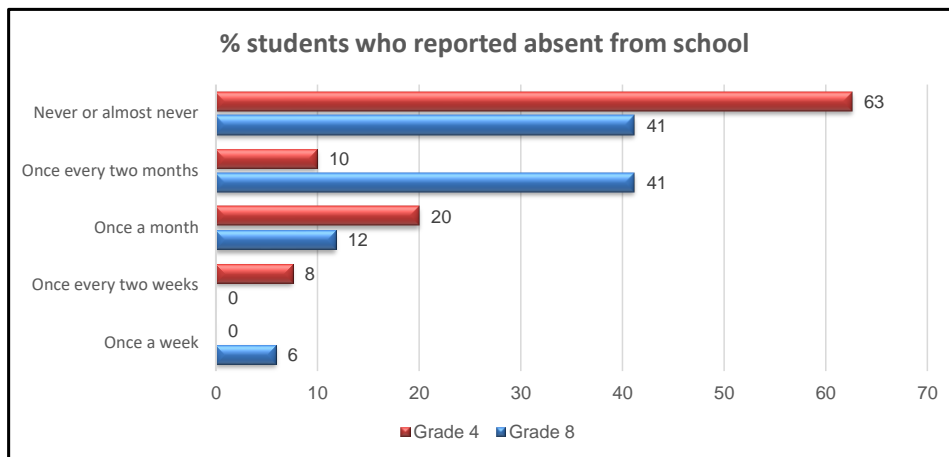
Nationality	Overall Score in Mathematics	Overall Score in Science
Emirati students in your school		
Expatriates students in your school		
Emirati students in private Schools	490	492
2023 TIMSS Dubai Target Scores for Emirati Students	510 - 515	502 - 517

***** Note : there is no comparison of Emirati students against Expatriate student if fewer than 5 Emirati students were included in sample tested, due to data restriction.**

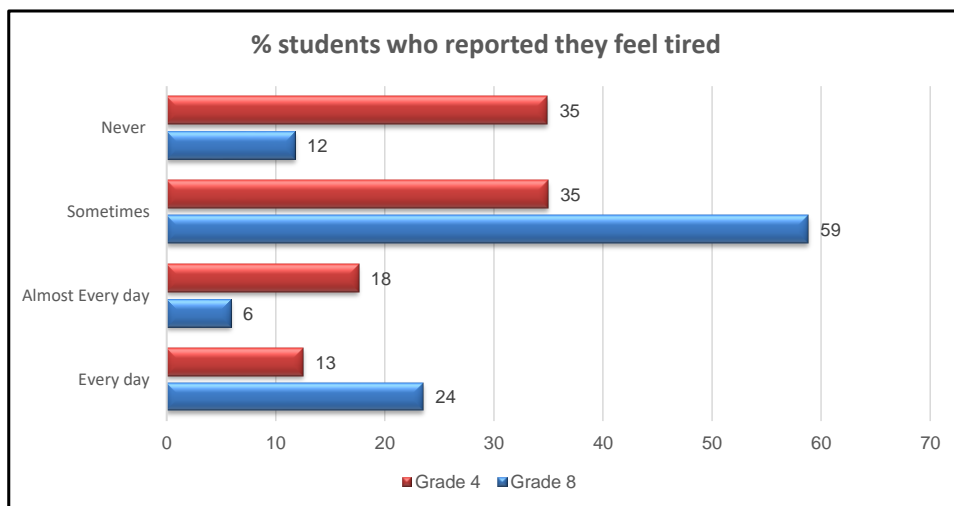
What did your students have to say?

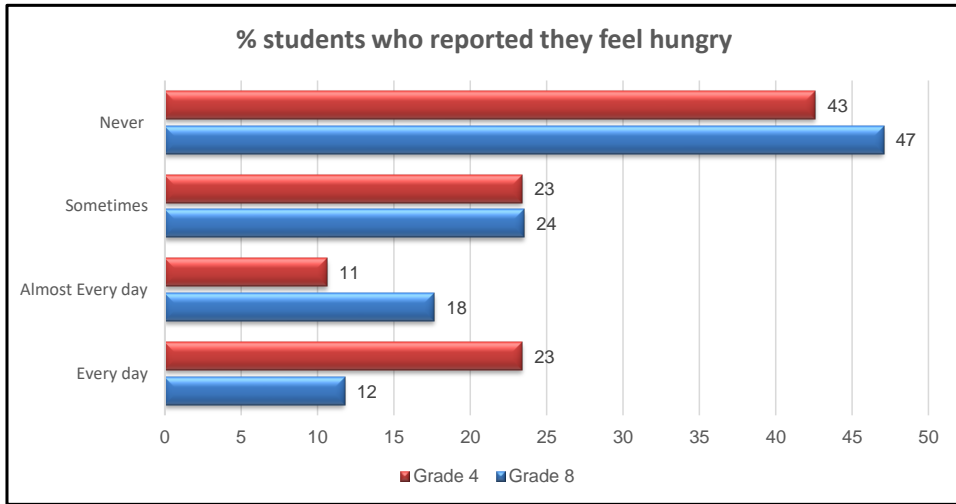
Students who sat for TIMSS 2019, answered a background questionnaire in addition to the test. The test sought information about the students themselves, their homes and their school and learning experiences. In its effort to improve standards and bring to the school's attention certain areas worth prioritising, KHDA has chosen a few of these questions to share with you. Answers to these questions may be relevant to your students' performance. Teachers and school principals need to be able to identify issues that students have. Understanding the problems that students face in their learning should help schools to find suitable solutions. TIMSS results also indicated that personal drive, motivation and confidence are essential if students are to fulfil their potential.

The tables below reflect the percentage of students in your school who answered to the following questions:

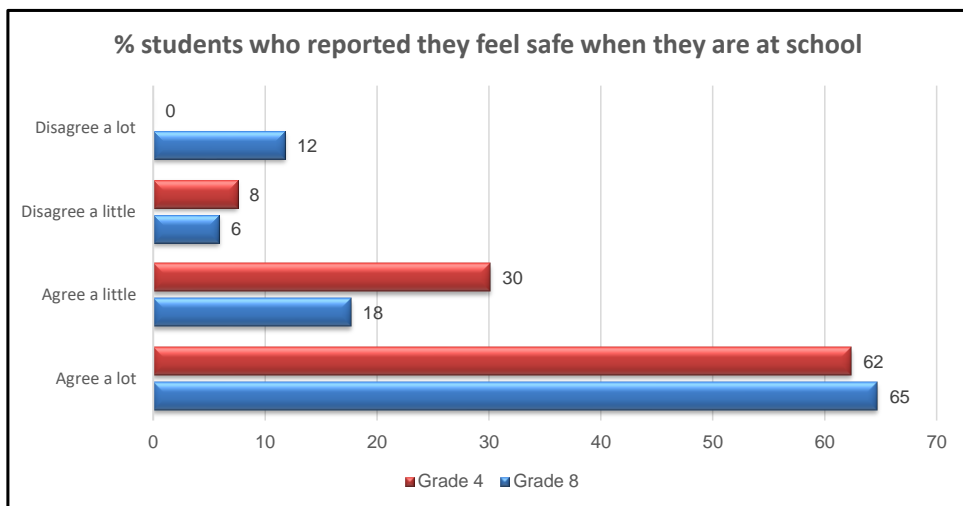
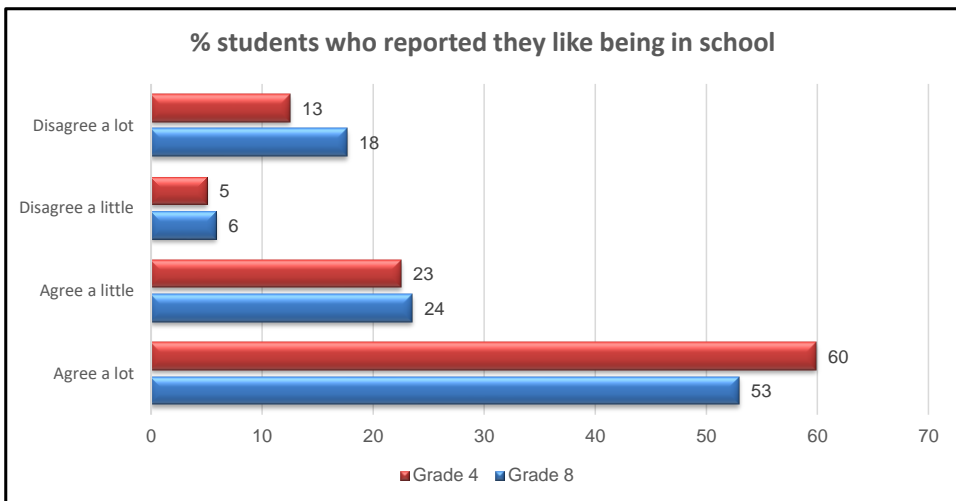


How often do you feel this way when you arrive at school?

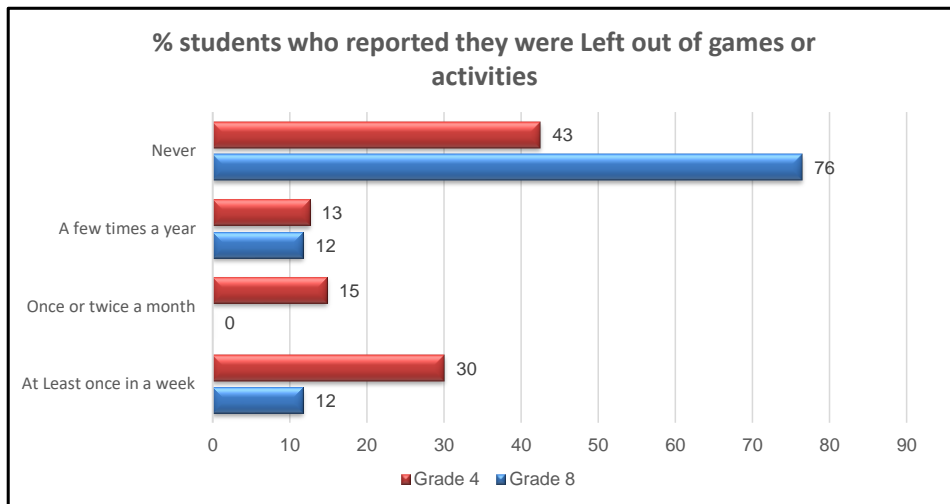
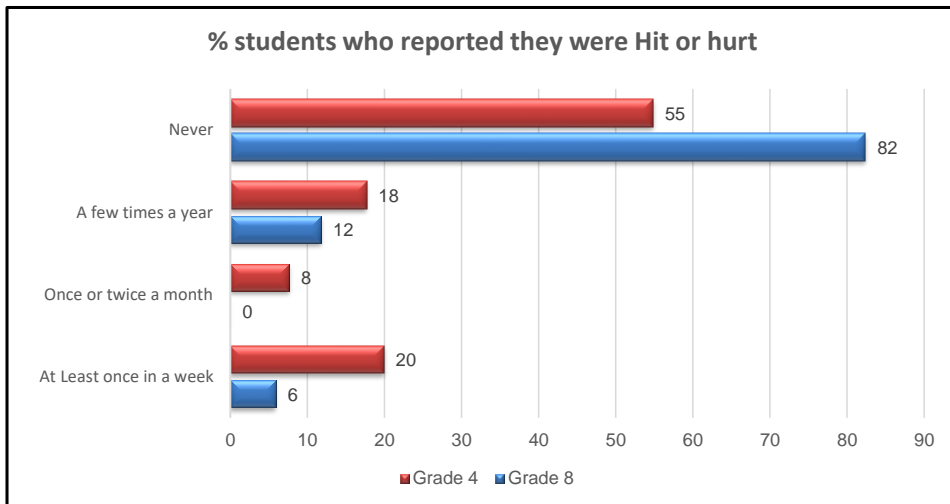
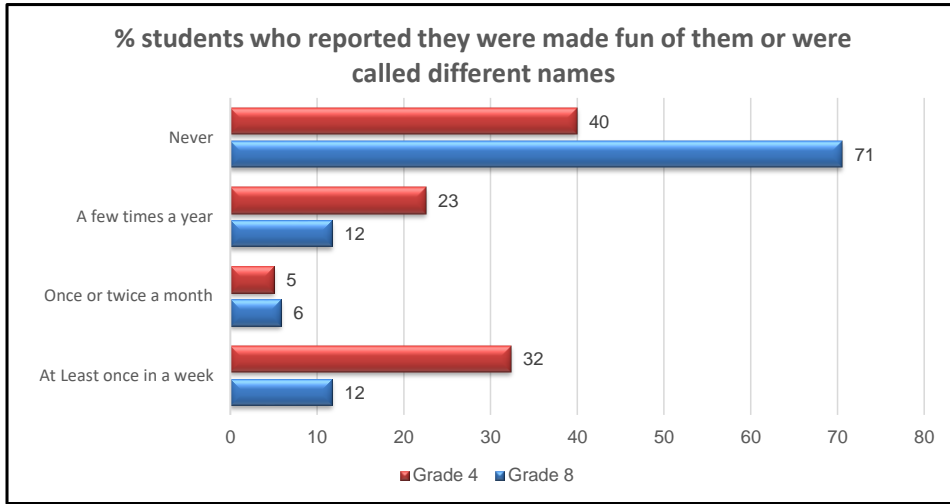


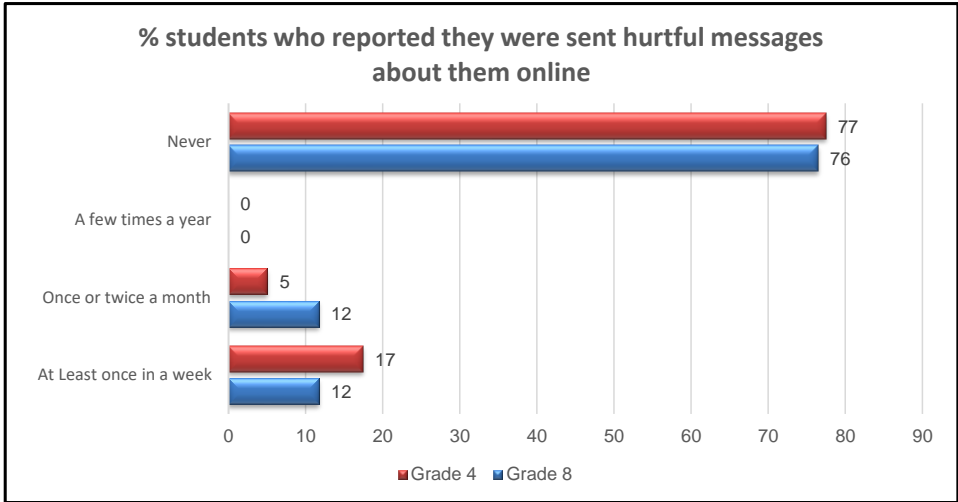


What do you think about your school?

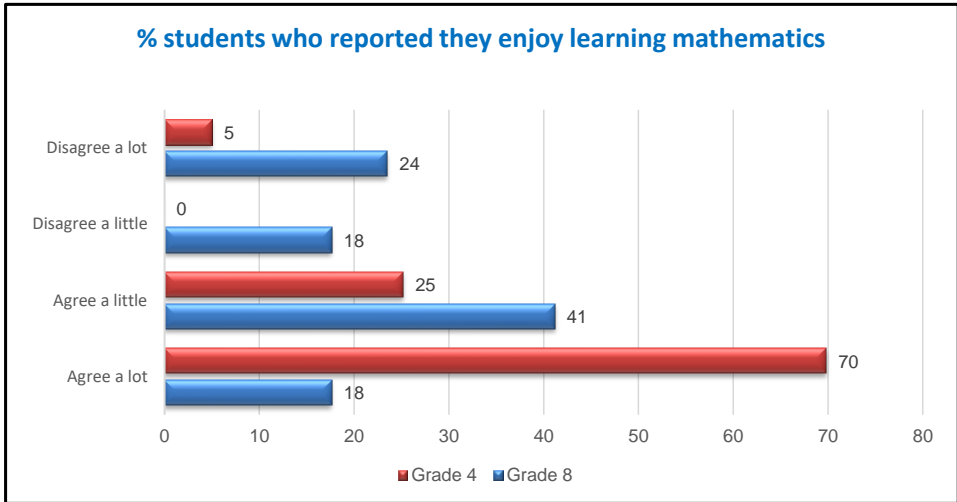


During this school year, how often have other students from your school done any of the following things to you, including through texting or the Internet?

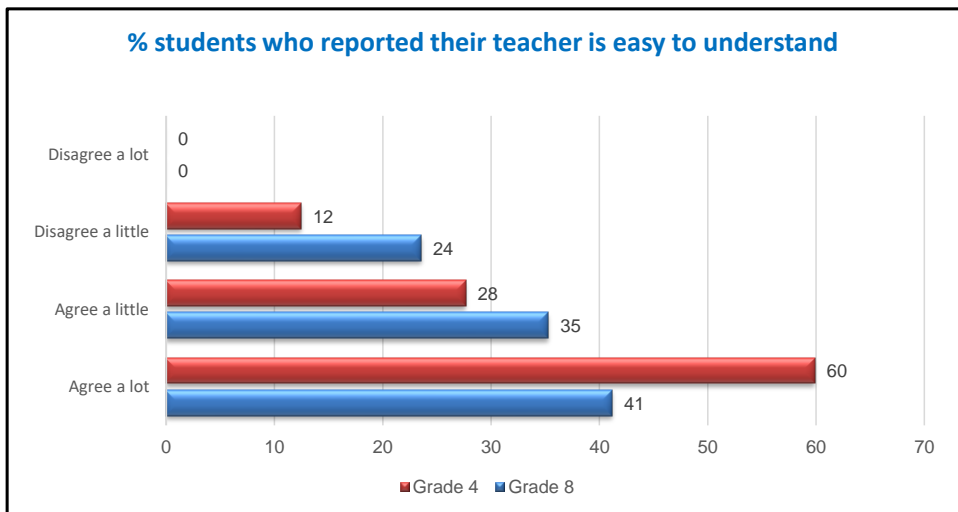


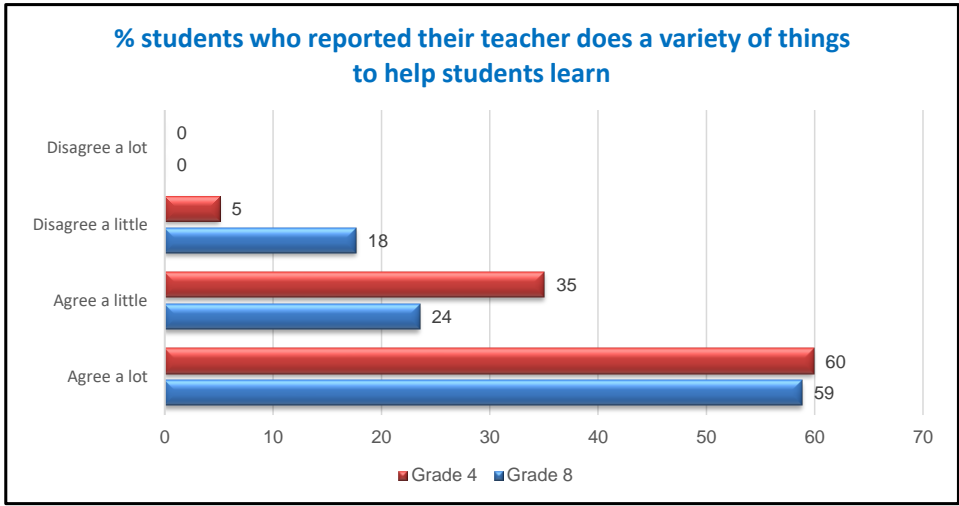
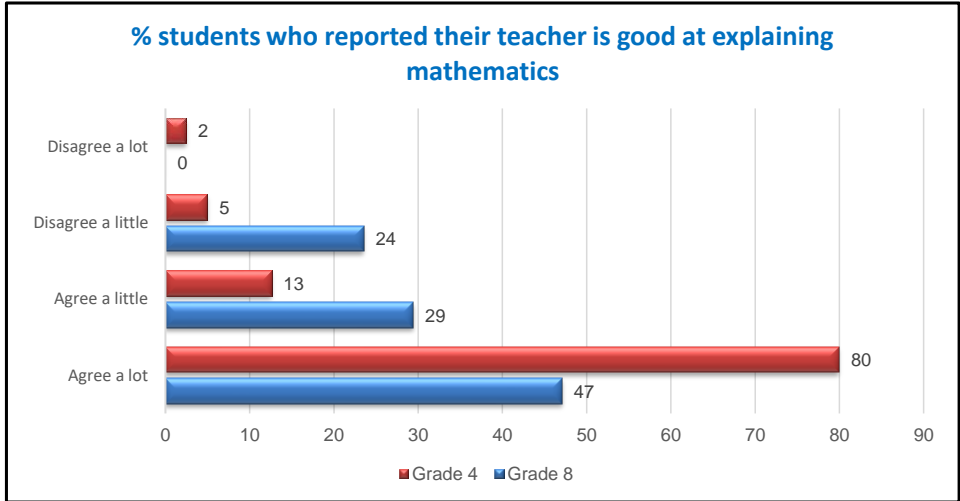


How much do you agree with these statements about learning mathematics?

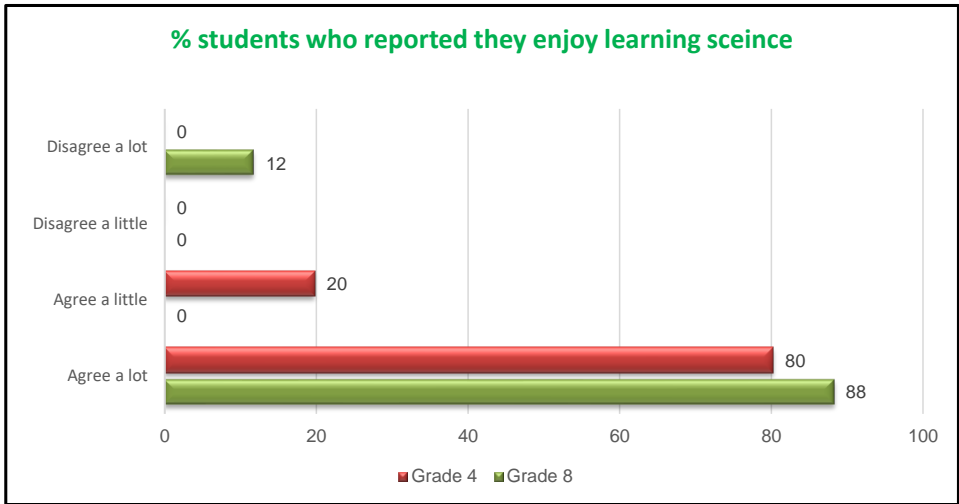


How much do you agree with these statements about your mathematics lessons?

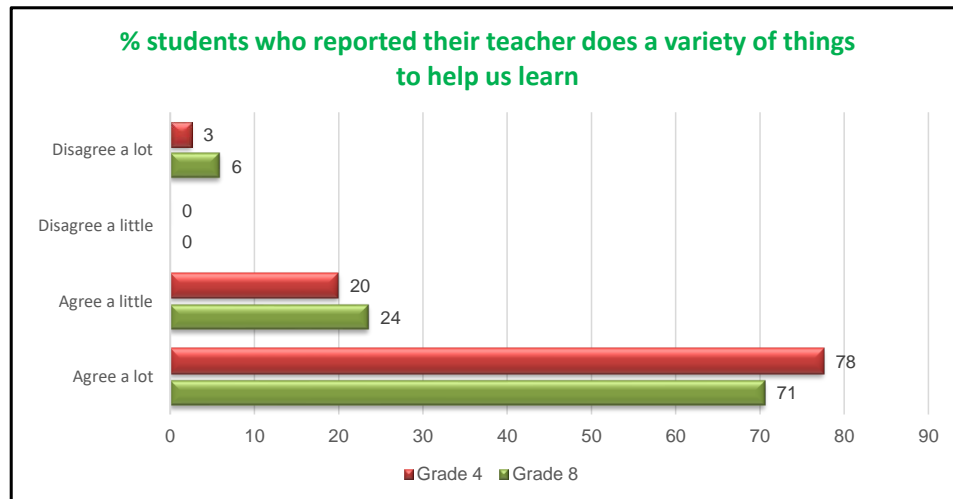
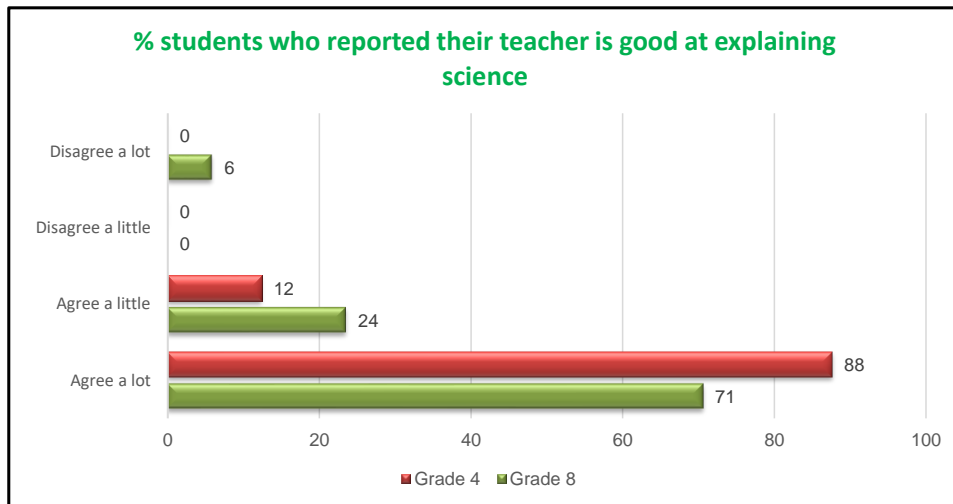
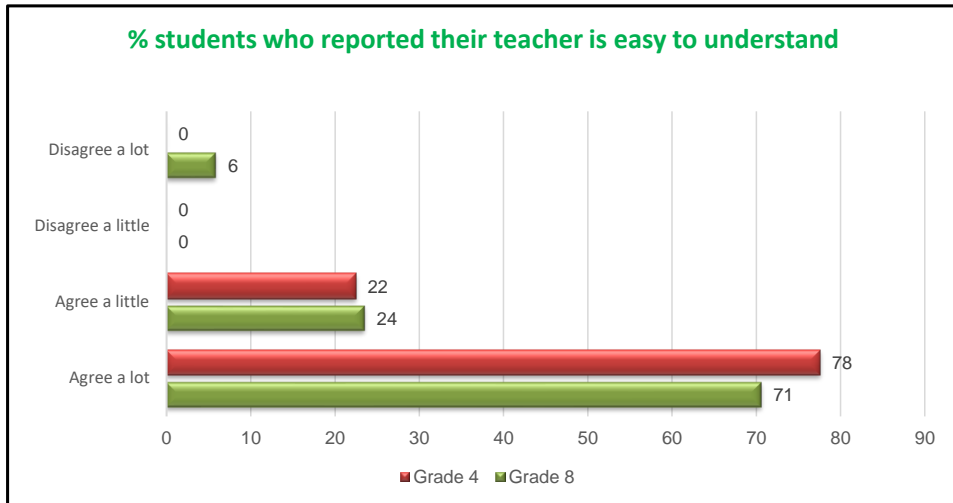




How much do you agree with these statements about learning science?



How much do you agree with these statements about your science lessons?



Appendix

Descriptions of the International Benchmarks

Grade 4 - Mathematics
Advanced International Benchmark- 625
<p>Students can apply their understanding and knowledge in a variety of relatively complex situations and explain their reasoning. Students can solve a variety of multistep word problems involving whole numbers and show an understanding of fractions and decimals. They can apply knowledge of two- and three-dimensional shapes in a variety of situations. Students can interpret and represent data to solve multistep problems.</p>
High International Benchmark- 550
<p>Students apply conceptual understanding to solve problems. They can apply conceptual understanding of whole numbers to solve two-step word problems. They show understanding of the number line, multiples, factors, and rounding numbers, and operations with fractions and decimals. Students can solve simple measurement problems. They demonstrate understanding of geometric properties of shapes and angles. Students can interpret and use data in tables and a variety of graphs to solve problems.</p>
Intermediate International Benchmark- 475
<p>Students can apply basic mathematical knowledge in simple situations. They can compute with three- and four-digit whole numbers in a variety of situations. They have some understanding of decimals and fractions. Students can identify and draw shapes with simple properties. They can read, label, and interpret information in graphs and tables.</p>
Low International Benchmark-400
<p>Students have some basic mathematical knowledge. They can add, subtract, multiply, and divide one- and two-digit whole numbers. They can solve simple word problems. They have some knowledge of simple fractions and common geometric shapes. Students can read and complete simple bar graphs and tables.</p>

Grade 8 - Mathematics

Advanced International Benchmark- 625

Students can apply and reason in a variety of problem situations, solve linear equations, and make generalizations. They can solve a variety of fraction, proportion, and percent problems and justify their conclusions. They can understand linear functions and algebraic expressions. Students can use their knowledge of geometric figures to solve a wide range of problems involving angles, area, and surface area. They can calculate means and medians and understand how changing data points can impact the mean. Students can interpret a wide variety of data displays to draw and justify conclusions and solve multistep problems. They can solve problems involving expected values.

High International Benchmark- 550

Students can apply their understanding and knowledge in a variety of relatively complex situations. They can solve problems with fractions, decimals, ratios, and proportions. Students at this level show basic procedural knowledge related to algebraic expressions and equations. They can solve a variety of problems with angles, including problems involving triangles, parallel lines, rectangles, and congruent and similar figures. Students can interpret data in a variety of graphs and solve simple problems involving outcomes and probabilities.

Intermediate International Benchmark- 475

Students can apply basic mathematical knowledge in a variety of situations. They can solve problems involving whole numbers, negative numbers, fractions, decimals, and ratios. Students have some basic knowledge about properties of two-dimensional shapes. They can read and interpret data in graphs and have some rudimentary knowledge of probability.

Low International Benchmark-400

Students have some knowledge of whole numbers and decimals, operations, and basic graphs.

Grade 4 - Science

Advanced International Benchmark- 625

Students communicate their understanding of life, physical, and Earth sciences and demonstrate some knowledge of the process of scientific inquiry. Students demonstrate knowledge of characteristics and life processes of a variety of organisms. They can communicate understanding of relationships in ecosystems and interactions between organisms and their environment. They communicate understanding of properties and states of matter and physical and chemical changes. Students communicate understanding of Earth's physical characteristics, processes, and history and show knowledge of Earth's revolution and rotation.

High International Benchmark- 550

Students communicate and apply knowledge of life, physical, and Earth sciences. Students communicate knowledge of characteristics of plants, animals, and their life cycles, and apply knowledge of ecosystems and of humans' and organisms' interactions with their environment. Students demonstrate knowledge of states and properties of matter and of energy transfer in practical contexts and show some understanding of forces and motion. Students know various facts about the Earth's physical characteristics and show basic understanding of the Earth-Moon-Sun system.

Intermediate International Benchmark- 475

Students show knowledge and understanding of some aspects of science. Students demonstrate some basic knowledge of plants and animals. They demonstrate knowledge about some properties of matter and some facts related to electricity and can apply elementary knowledge of forces and motion. They show some understanding of Earth's physical characteristics.

Low International Benchmark-400

Students show limited understanding of scientific concepts and limited knowledge of foundational science facts.

Grade 8 - Science

Advanced International Benchmark- 625

Students communicate understanding of concepts related to biology, chemistry, physics, and Earth science in a variety of contexts. Students can classify animals into taxonomic groups. They can apply knowledge of cell structures and their functions. Students show some understanding of diversity, adaptation, and natural selection. They also recognize the interdependence of populations of organisms in an ecosystem. Students demonstrate knowledge of the composition of matter and the periodic table of the elements. Students use physical properties of matter to sort, classify, and compare substances and materials. They also recognize evidence that a chemical reaction has occurred. Students communicate understanding of particle spacing and motion in different physical states. Students apply knowledge of energy transfer and electrical circuits, can relate the properties of light and sound to common phenomena, and demonstrate understanding of forces in everyday contexts. Students communicate understanding of Earth's structure, physical features, and processes. They demonstrate knowledge of the Earth's resources and their conservation.

High International Benchmark- 550

Students apply understanding of concepts from biology, chemistry, physics, and Earth science. Students can apply knowledge of the characteristics of groups of animals, life processes in humans, cells and their functions, genetic inheritance, ecosystems, and nutrition. Students show some knowledge and understanding of the composition and properties of matter and chemical reactions. They can apply basic knowledge of energy transformation and transfer, electrical circuits, properties of magnets, light, sound, and forces. They can apply knowledge of Earth's physical features, processes, cycles, and history, and show some understanding of Earth's resources and their use.

Intermediate International Benchmark- 475

Students show and apply some knowledge of biology and the physical sciences. Students demonstrate some knowledge of characteristics of animals and apply knowledge of ecosystems. They show some knowledge of the properties of matter, chemical changes, and a few physics concepts.

Low International Benchmark-400

Students show limited understanding of scientific principles and concepts and limited knowledge of science facts.

References:

Education Endowment Foundation:

<https://educationendowmentfoundation.org.uk/tools/guidance-reports/improving-secondary-science/>

TIMSS 2019 Assessment Design:

<https://timssandpirls.bc.edu/timss2019/frameworks/framework-chapters/assessment-design/>

TIMSS 2019 Context Questionnaire Framework:

<https://timssandpirls.bc.edu/timss2019/frameworks/framework-chapters/context-questionnaire-framework/>

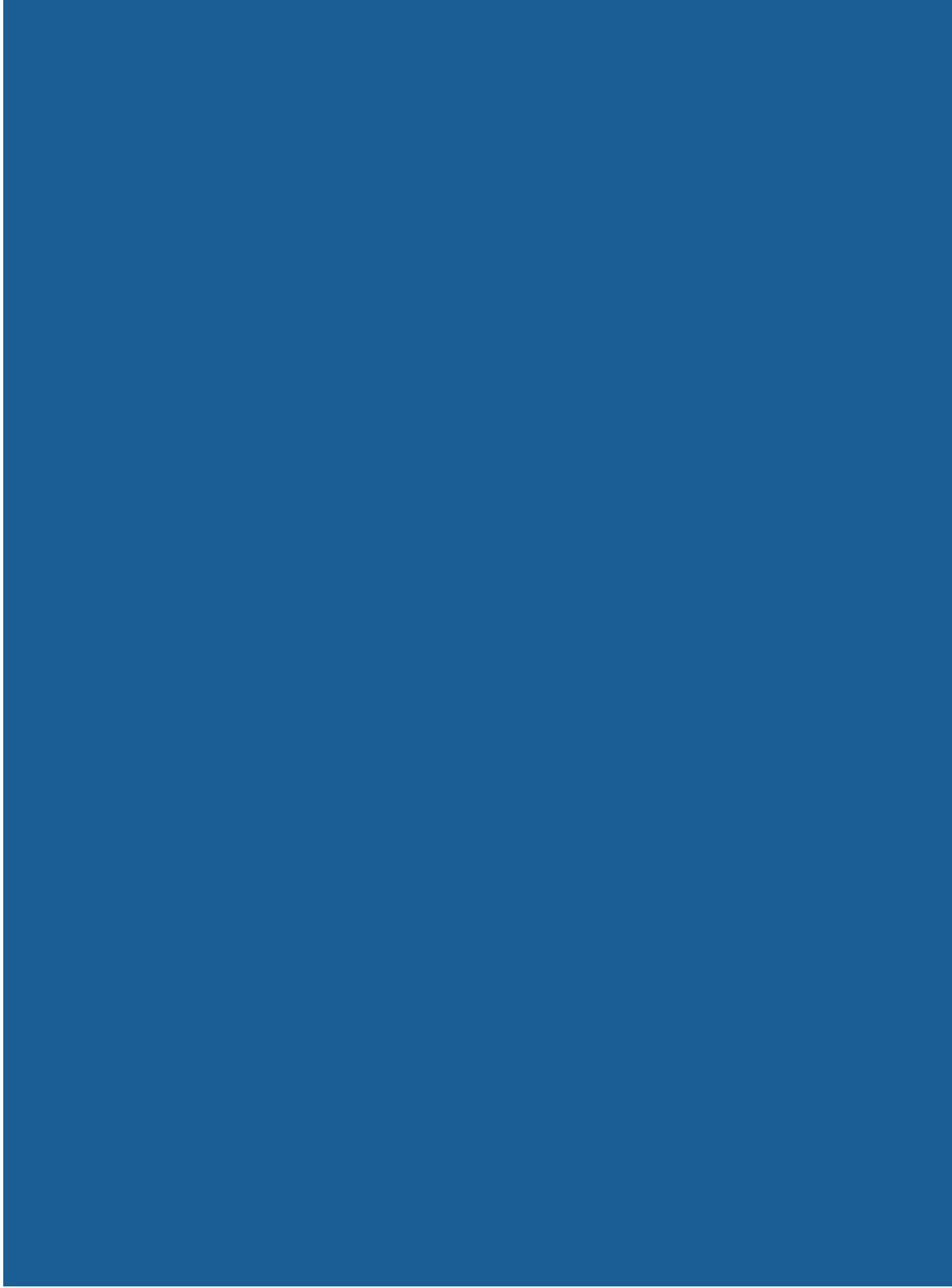
For more information about Dubai's participation in TIMSS 2019, please check Dubai's TIMSS report:

<https://www.khda.gov.ae/en/publications>

How to contact us:

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