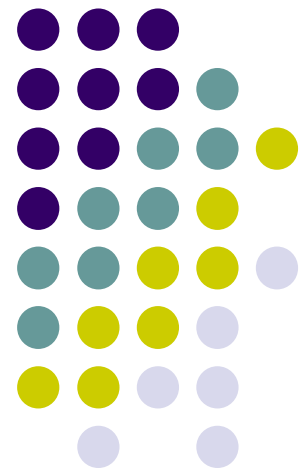
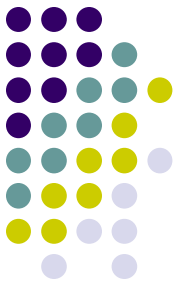


TIMSS 2019: Information and Training Sessions for Year 5 Teachers

Directorate for Learning and Assessment Programmes
October 2018

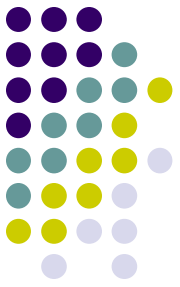




Outline of the presentation

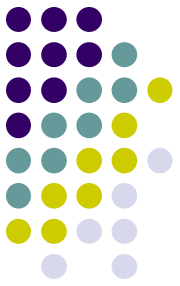
- Overview of TIMSS components and results achieved by Maltese students
- Observations from TIMSS 2011
- Using the eTIMSS app

Background to TIMSS



- The Trends in International Mathematics and Science Study is a comparative international study of Mathematics and Science achievement
- This is the second time Malta will be participating in Grade 4 (Year 5)
- All Year 5 students will be taking part
- TIMSS to be administered in March-April 2019
- TIMSS includes questionnaires completed by the Head of School, teachers, pupils and parents

Domains Identified and Tested by TIMSS

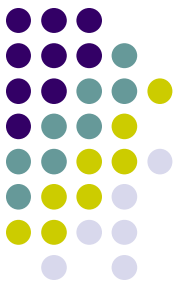


Cognitive Domain	Content Domain	
Common for both subjects	Mathematics	Science
Knowing	Number	Life Science
Applying	Geometric Shapes and Measure	Earth Science
Reasoning	Data Display	Physical Science



The Cognitive Domains

- **Knowing** refers to the students' knowledge base of facts, concepts, tools and procedures
- **Applying** focuses on the students' ability to apply knowledge and conceptual understanding in a problem situation
- **Reasoning** goes beyond the solution of routine problems to encompass unfamiliar situations, complex contexts, and multi-step problems

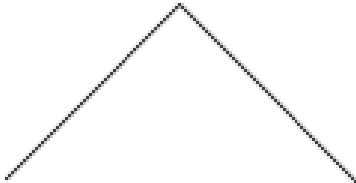


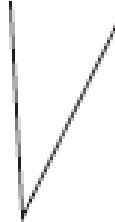
The Cognitive Domains

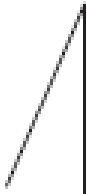
- **Knowing** refers to the students' knowledge base of facts, concepts, tools and procedures

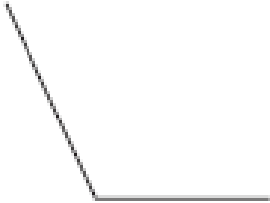
Content Domain	Main Topic	Cognitive Domain
GEOMETRIC SHAPES AND MEASURES	Points, Lines, and Angles	Knowing

One of these angles is a right angle. Which one?

A. 

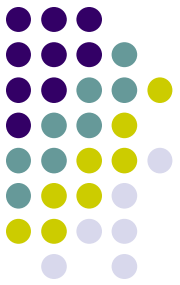
B. 

C. 

D. 

71% of Maltese students got this question right

Another example of Cognitive Domain 'Knowing' (Science)



Content Domain	Main Topic	Cognitive Domain
PHYSICAL SCIENCE	Forces and Motion	Knowing

The picture shows a boat sailing.



Which force causes the boat to move?

- A. gravity
- B. wind
- C. friction
- D. magnetism

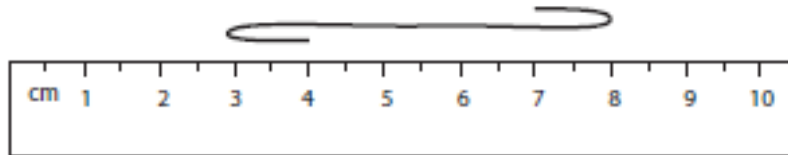
88% of Maltese students got this question right



The Cognitive Domains (cont.)

- **Applying** focuses on the students' ability to apply knowledge and conceptual understanding in a problem situation

Content Domain	Main Topic	Cognitive Domain
GEOMETRIC SHAPES AND MEASURES	Points, Lines, and Angles	Applying



If the string in the diagram above is pulled straight, which of these is closest to its length?

- A. 5 cm
- B. 7 cm
- C. 8 cm
- D. 9 cm

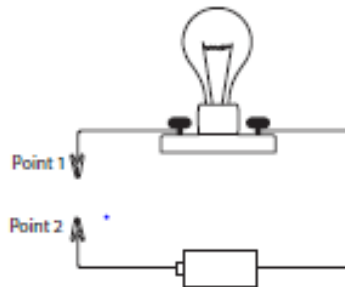
18% of Maltese students got this question right

Another example of Cognitive Domain 'Applying' (Science)



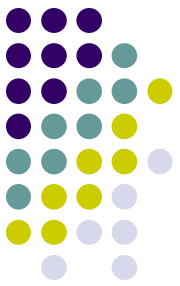
Content Domain	Main Topic	Cognitive Domain
PHYSICAL SCIENCE	Sources and Effects of Energy	Applying

The following picture shows a lightbulb connected to a battery in an electrical circuit. Which of the following objects connected to Points 1 and 2 will allow the bulb to glow?



- A. iron nail
- B. plastic spoon
- C. rubber band
- D. wooden stick

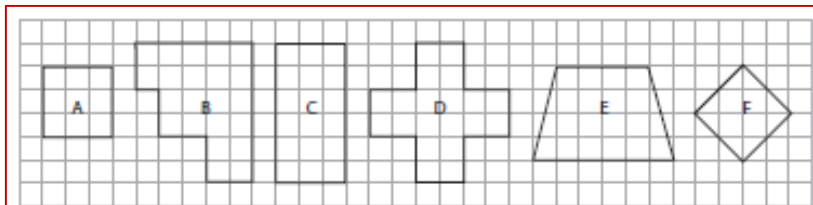
75% of Maltese students got this question right



The Cognitive Domains (cont.)

- **Reasoning** goes beyond the solution of routine problems to encompass unfamiliar situations, complex contexts, and multi-step problems

Content Domain	Main Topic	Cognitive Domain
GEOMETRIC SHAPES AND MEASURES	Two- and Three-dimensional Shapes	Reasoning

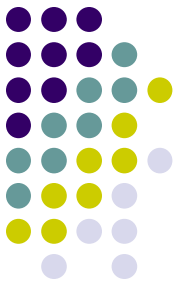


Sean used the table to sort these shapes.
Put the letter of each shape in the space where it belongs.
Shape A has been done for you.

	Has 4 Sides	Does Not Have 4 Sides
All sides are the same length	A	
All sides are NOT the same length		

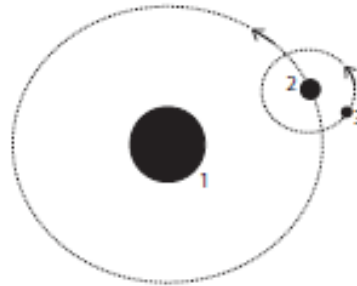
11% of Maltese students got this question right

Example of Cognitive Domain 'Reasoning'



Content Domain	Main Topic	Cognitive Domain
EARTH SCIENCE	Earth in the Solar System	Reasoning

The figure below shows Earth, the Moon, and the Sun. Each body is labeled by a number. The arrows show the direction each body is moving.



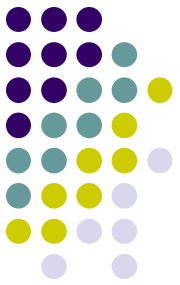
Fill in the correct number next to each body (1, 2 or 3).

Earth is body number: _____

The Moon is body number: _____

The Sun is body number: _____

50% of
Maltese
students
got this
question
right



Attainment in Mathematics

(based on TIMSS 2011)

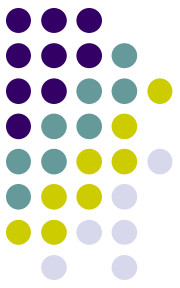
Mathematics Attainment in 'Knowing', 'Applying' and 'Reasoning'



- On average, Maltese boys consistently perform better than girls in all cognitive areas

	Knowing	Applying	Reasoning
Girls	500	494	470
Boys	508	498	480

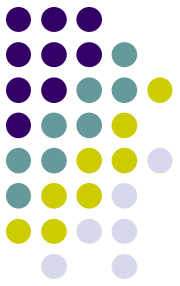
Mathematics Attainment in ‘Number’, ‘Geometric Shapes and Measures’ and ‘Data Display’



- On average, Maltese boys consistently perform better than girls in all content areas

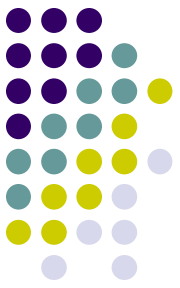
	Number	Geometric Shapes and Measures	Data Display
Girls	493	484	497
Boys	502	489	499

Pupils' Attainment in Mathematics

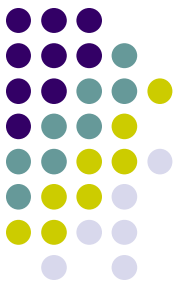


- TIMSS International Mean: 500
- Malta's Mean Score: 496
- Malta ranked higher than 21 countries including New Zealand, Poland and Spain;
26 countries scored higher than Malta

Mathematics Percentile Scores



Country	5th	10th	25th	50th	75th	90th	95th
Singapore	464	502	559	612	661	701	723
Finland	430	456	501	549	592	631	654
England	385	423	483	549	605	652	677
Germany	420	446	488	530	570	606	626
Malta	357	391	446	502	549	590	613
Poland	352	384	435	485	531	570	595

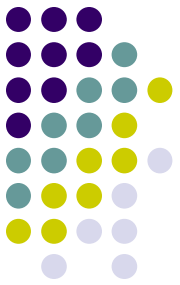


International Benchmarks

The percentage of the Maltese students' Mathematics Achievement according to these benchmarks were:

	Low Benchmark (400 – 475)	Intermediate Benchmark (475 – 550)	High Benchmark (550 – 625)	Advanced Benchmark (> 625)
Malta	88%	63%	25%	4%
Int. Average	90%	69%	28%	4%

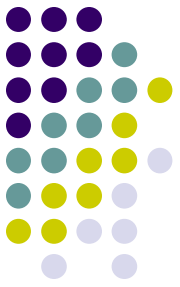
12% of Maltese students did not reach the Low Benchmark



Attainment in Science

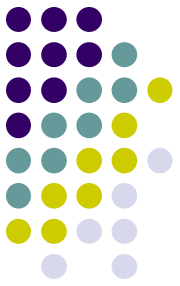
(based on TIMSS 2011)

Science Attainment in 'Knowing', 'Applying' and 'Reasoning'



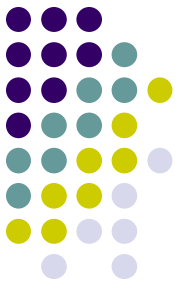
- Maltese boys on average score higher than girls in 'Knowing' and 'Applying'
- Maltese boys and girls perform comparably equal to each other in 'Reasoning'
- Students attending Independent schools score higher than pupils in State and Church schools in all Cognitive Domains

Pupils' Attainment in Science



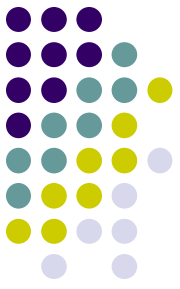
- TIMSS International Mean Score:
500 score points
- Malta's Mean Score: 446 score points
- 39 countries obtained higher scores than Malta
while 10 countries obtained lower scores

Science Percentile Scores



	5%	10%	25%	50%	75%	90%	95%
Finland	456	485	529	574	615	651	674
Hungary	377	420	484	542	594	637	662
England	384	420	476	535	586	629	653
Malta	271	314	384	453	514	565	594
U.A.E.	238	279	350	433	507	569	604

Gender differences in Science Performance



- Girls outperformed boys in 17 countries including England, Kuwait and the Russian Federation
- Boys scored better than girls in 31 countries including Malta



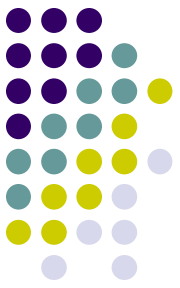
International Benchmarks

The percentage of the Maltese students' Science Achievement according to these benchmarks were:

	Low Benchmark (400 – 475)	Intermediate Benchmark (475 – 550)	High Benchmark (550 – 625)	Advanced Benchmark (> 625)
Malta	70%	41%	14%	2%
Int. Average	92%	72%	32%	5%

30% of Maltese students did not reach the Low Benchmark

Attitudes to Maths and Science



- Positive attitudes to maths and science are acknowledged as essential to learning
- Such attitudes, from both teachers and learners, can affect achievements in these subjects
- The occurrence of these attitudes were assessed through teacher and student questionnaires
- Other assessed areas included the amount of instructional time, TIMSS topics covered by end of Year 5 and teacher collaboration

Career satisfaction of Maltese Year 5 teachers (2011)

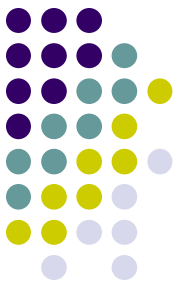


Table 7.9: Career satisfaction of Maltese school teachers

How much do you agree with the following statements?	Agree a lot	Agree a little	Disagree a little	Disagree a lot
I am content with my profession as a teacher	80.1%	16.0%	3.9%	0.0%
I am satisfied with being a teacher at this school	80.7%	15.7%	3.6%	0.0%
I had more enthusiasm when I began teaching	10.0%	24.5%	25.5%	40.0%
I do important work as a teacher	92.1%	7.6%	0.3%	0.0%
I plan to continue as a teacher for as long as I can	69.4%	21.5%	8.2%	0.9%
I am frustrated as a teacher	0.6%	12.5%	20.7%	66.3%

	Satisfied		Somewhat satisfied		Less than satisfied	
	Percent of pupils	Mean score	Percent of pupils	Mean score	Percent of pupils	Mean score
Year 5 teachers (2011)	69 (0.1)	502 (1.6)	28 (0.1)	484 (2.6)	3 (0.1)	486 (9.0)

For further information:



- **Resource packs**

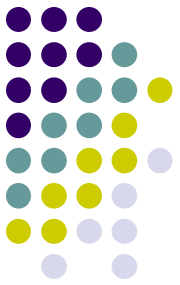
https://curriculum.gov.mt/en/international_studies/Pages/tchr_resource_packs.aspx

- **TIMSS surveys**

https://curriculum.gov.mt/en/international_studies/Pages/TIMSS.aspx

- **Contact EAU**

Tel. 2598 2735 / 2598 2727



Thank you for your attention