

Exhibit 8.8: Teacher Participation in Professional Development in Mathematics in the Past Two Years

Reported by Teachers

Teachers could indicate participating in more than one area of professional development.

Country	Percent of Students by Teachers' Area of Professional Development						
	Mathematics Content	Mathematics Pedagogy/ Instruction	Mathematics Curriculum	Integrating Information Technology into Mathematics	Improving Students' Critical Thinking or Problem Solving Skills	Mathematics Assessment	Addressing Individual Students' Needs
Australia	65 (2.6)	67 (2.7)	71 (2.8)	59 (2.6)	49 (3.9)	47 (3.4)	58 (3.8)
Bahrain	45 (3.2)	65 (2.9)	44 (2.7)	69 (2.9)	60 (3.5)	58 (3.6)	64 (3.6)
Botswana (9)	45 (4.1)	28 (3.7)	51 (4.8)	26 (4.1)	31 (4.3)	39 (4.3)	33 (4.5)
Canada	66 (3.1)	72 (3.2)	47 (3.3)	62 (3.2)	64 (3.2)	49 (3.7)	57 (2.6)
Chile	48 (4.0)	41 (4.6)	30 (3.5)	27 (4.1)	30 (4.0)	22 (3.7)	18 (3.2)
Chinese Taipei	78 (3.3)	65 (3.6)	72 (3.5)	60 (3.3)	40 (3.6)	65 (3.6)	46 (3.9)
Egypt	49 (4.0)	60 (3.7)	40 (3.6)	40 (3.5)	55 (4.0)	47 (4.1)	56 (3.9)
England	59 (4.2)	65 (4.4)	65 (3.7)	41 (4.7)	43 (4.4)	43 (4.3)	48 (4.4)
Georgia	39 (4.3)	41 (4.2)	41 (4.5)	53 (4.7)	40 (4.5)	34 (4.2)	35 (4.3)
Hong Kong SAR	63 (4.3)	64 (4.7)	51 (4.5)	58 (4.5)	42 (4.5)	42 (4.4)	50 (4.4)
Hungary	28 (3.3)	36 (3.3)	15 (2.7)	31 (3.5)	18 (2.7)	20 (3.2)	22 (3.3)
Iran, Islamic Rep. of	74 (3.0)	83 (2.9)	55 (3.9)	39 (3.5)	42 (3.4)	40 (2.7)	36 (3.0)
Ireland	94 (1.2)	78 (2.6)	91 (1.7)	65 (2.9)	71 (2.5)	40 (2.6)	35 (2.7)
Israel	69 (2.7)	70 (2.5)	60 (2.9)	65 (2.8)	42 (3.4)	34 (2.5)	51 (2.6)
Italy	26 (3.3)	40 (3.4)	30 (3.7)	41 (4.0)	25 (3.2)	24 (3.3)	45 (4.1)
Japan	70 (3.0)	68 (3.6)	28 (3.6)	39 (3.6)	30 (3.4)	23 (3.3)	37 (3.7)
Jordan	25 (3.3)	36 (3.4)	24 (2.7)	31 (3.3)	49 (3.3)	26 (3.4)	42 (3.8)
Kazakhstan	59 (3.9)	73 (3.9)	60 (4.2)	82 (3.2)	75 (3.7)	66 (4.0)	66 (3.8)
Korea, Rep. of	51 (3.1)	63 (3.3)	44 (3.1)	32 (3.1)	34 (3.3)	46 (3.8)	38 (3.3)
Kuwait	63 (4.1)	62 (4.3)	61 (4.0)	45 (3.9)	56 (3.8)	50 (4.0)	57 (4.3)
Lebanon	57 (4.8)	60 (4.3)	51 (4.5)	53 (4.3)	53 (4.1)	57 (4.7)	47 (4.6)
Lithuania	62 (4.4)	61 (4.3)	57 (3.8)	70 (3.5)	53 (3.6)	68 (3.5)	50 (4.6)
Malaysia	47 (3.6)	65 (3.6)	46 (3.7)	36 (4.0)	70 (3.7)	56 (3.3)	33 (3.6)
Malta	45 (0.1)	60 (0.2)	54 (0.2)	57 (0.1)	33 (0.1)	41 (0.1)	44 (0.1)
Morocco	23 (3.0)	27 (2.9)	20 (2.8)	41 (3.0)	14 (2.3)	24 (2.9)	13 (2.5)
New Zealand	66 (3.2)	63 (3.6)	61 (2.6)	58 (3.5)	37 (3.2)	51 (2.6)	48 (3.0)
Norway (9)	18 (3.3)	24 (3.6)	11 (2.6)	36 (3.2)	12 (2.7)	22 (3.5)	12 (2.5)
Oman	50 (3.4)	56 (3.5)	36 (3.2)	38 (3.1)	41 (3.0)	36 (3.1)	27 (2.7)
Qatar	67 (3.0)	71 (3.1)	60 (3.5)	62 (3.5)	59 (3.2)	62 (2.8)	64 (3.1)
Russian Federation	70 (3.7)	79 (3.1)	77 (3.2)	78 (2.4)	42 (3.6)	51 (4.0)	51 (3.7)
Saudi Arabia	49 (4.8)	69 (4.3)	36 (4.1)	37 (3.8)	44 (4.5)	33 (4.1)	40 (4.3)
Singapore	68 (2.5)	90 (1.7)	65 (2.6)	62 (2.6)	55 (2.7)	51 (2.9)	38 (2.9)
Slovenia	60 (3.5)	57 (3.6)	36 (2.7)	55 (3.2)	36 (3.3)	40 (3.2)	35 (2.9)
South Africa (9)	84 (3.0)	58 (3.6)	86 (2.4)	45 (3.5)	56 (3.2)	73 (2.7)	52 (3.7)
Sweden	58 (4.6)	70 (4.4)	39 (4.5)	18 (2.5)	52 (4.1)	52 (4.0)	25 (3.6)
Thailand	70 (3.5)	73 (3.6)	56 (4.1)	63 (3.5)	57 (3.9)	50 (3.9)	31 (3.4)
Turkey	19 (2.6)	27 (3.2)	25 (3.0)	27 (3.0)	26 (3.0)	33 (3.3)	21 (2.7)
United Arab Emirates	59 (2.4)	60 (2.8)	60 (2.3)	71 (2.1)	71 (2.2)	59 (2.6)	68 (2.1)
United States	78 (2.5)	70 (2.7)	84 (2.0)	65 (2.9)	62 (2.7)	61 (2.8)	59 (3.1)
International Avg.	56 (0.6)	59 (0.6)	50 (0.5)	50 (0.5)	45 (0.6)	44 (0.6)	42 (0.6)

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS 2015

Benchmarking Participants

Buenos Aires, Argentina	x x	x x	x x	x x	x x	x x	x x	x x
Ontario, Canada	r 74 (3.9)	r 79 (4.1)	r 57 (4.1)	r 60 (4.2)	r 81 (3.2)	r 53 (4.9)	r 61 (3.8)	
Quebec, Canada	49 (5.2)	58 (4.5)	26 (5.2)	70 (4.7)	30 (5.7)	39 (5.4)	57 (4.0)	
Norway (8)	20 (3.5)	25 (3.6)	12 (2.5)	36 (3.8)	11 (2.8)	20 (3.5)	11 (2.6)	
Abu Dhabi, UAE	45 (4.3)	51 (4.9)	47 (4.8)	61 (4.9)	71 (4.1)	50 (4.9)	74 (4.0)	
Dubai, UAE	71 (2.6)	68 (3.0)	73 (2.5)	83 (2.0)	76 (2.7)	59 (3.2)	67 (3.2)	
Florida, US	r 82 (6.4)	r 77 (7.4)	r 81 (6.5)	r 67 (8.2)	r 67 (7.1)	r 66 (6.6)	r 67 (6.0)	

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

An "r" indicates data are available for at least 70% but less than 85% of the students. An "x" indicates data are available for less than 50% of students.