## Appendix 17A: Characteristics of the eTIMSS 2019 with Problem Solving and Inquiry Samples

	Coverage	Notes on Coverage	School- Level Exclusions	Within- Sample Exclusions	Overall Exclusions
Austria	100%		0.9%	4.5%	5.4%
12 Canada	79%	Students from the provinces of Alberta, Manitoba, Newfoundland, Ontario, and Quebec	3.1%	3.9%	7.0%
Chile	100%		1.2%	2.6%	3.8%
Chinese Taipei	100%		0.3%	1.6%	2.0%
Croatia	100%		1.1%	3.1%	4.2%
Czech Republic	100%		2.5%	2.2%	4.7%
Denmark	100%		1.6%	1.5%	3.1%
<sup>2</sup> England	100%		2.2%	3.6%	5.8%
Finland	100%		1.8%	1.5%	3.3%
France	100%		2.5%	1.9%	4.4%
<sup>1</sup> Georgia	92%	Students taught in Georgian	2.8%	1.8%	4.7%
Germany	100%		1.7%	2.2%	3.9%

	Coverage	Notes on Coverage	School- Level Exclusions	Within- Sample Exclusions	Overall Exclusions
Chile	100%		0.3%	1.9%	2.2%
Chinese Taipei	100%		0.1%	1.3%	1.5%
England	100%		2.9%	2.0%	4.8%
Finland	100%		1.5%	1.5%	3.1%
France	100%		2.8%	1.0%	3.8%
<sup>1</sup> Georgia	91%	Students taught in Georgian	2.2%	2.1%	4.3%
Hong Kong SAR	100%		1.2%	2.1%	3.3%
Hungary	100%		2.5%	1.9%	4.4%
<sup>3</sup> Israel	100%		19.5%	3.8%	23.2%
Italy	100%		0.8%	3.6%	4.3%
Korea, Rep. of	100%		0.7%	0.9%	1.6%
Lithuania	100%		3.2%	2.0%	5.3%
Malaysia	100%		1.9%	1.3%	3.2%
Norway (9)	100%		1.4%	2.5%	4.0%
Portugal	100%		1.0%	4.5%	5.5%
Qatar	100%		1.3%	0.9%	2.2%
<sup>2</sup> Russian Federation	100%		2.8%	2.9%	5.7%
<sup>2</sup> Singapore	100%		10.1%	0.2%	10.3%
<sup>2</sup> Sweden	100%		1.7%	4.6%	6.3%
Turkey	100%		1.1%	2.4%	3.4%
United Arab Emirates	100%		1.1%	1.3%	2.4%
United States	100%		0.0%	3.9%	3.9%

Benchmarking Pa0092a095w26095w2605%0 Td (1400%d03v261 ((nc)/4m)) a 3 (9 165 0 Td (1400%d03v261 ((nc)/2)) w21 ((nc)/2) 400%d03v261 ((nc)/2))

	Schools	Students	Schools	Students	Student Population Size Estimated from Sample
Austria	3,095	81,406	193	5,097	82,158
Canada	9,796	304,798	704	15,582	306,230
Chile	6,081	252,190	169	4,775	250,230
Chinese Taipei	2,476	190,975	162	4,295	188,886
Croatia	1,571	39,244	153	4,335	39,860
Czech Republic	3,578	114,774	152	5,358	113,904
Denmark	1,644	66,225	166	3,693	66,950
England	15,349	644,127	139	3,872	667,451
Finland	1,840	59,755	158	5,397	59,198
France	31,716	822,438	155	4,792	827,474
Georgia	1,678	42,980	154	4,316	40,185
Germany	17,584	716,091	203	3,933	725,273
Hong Kong SAR	564	60,786	139	3,386	60,761
Hungary	2,888	94,673	149	5,227	89,198
Italy	6,809	556,298	162	4,269	549,275

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	Before	After			Before	After
	Replacement	Replacement			Replacement	Replacement
Austria	99%	99%	100%	100%	97%	96%
Canada	86%	90%	100%	100%	94%	81%
Chile	89%	99%	100%	100%	95%	85%
Chinese Taipei	95%	99%	100%	100%	98%	94%
Croatia	95%	97%	99%	99%	90%	84%
Czech Republic	99%	100%	100%	100%	95%	94%
† Denmark	70%	95%	99%	99%	86%	60%
England	86%	93%	100%	100%	95%	82%
Finland	99%	100%	100%	100%	96%	96%
France	100%	100%	100%	100%	97%	97%
Georgia	97%	99%	100%	100%	97%	93%
Germany	97%	100%	100%	100%	96%	94%
<sup>†</sup> Hong Kong SAR	67%	88%	100%	100%	89%	60%
Hungary	93%	99%	100%	100%	96%	89%
Italy	96%	100%	100%	100%	96%	92%
Korea, Rep. of	99%	99%	100%	100%	98%	97%
Lithuania	100%	100%	100%	100%	93%	93%
Malta	100%	100%	100%	100%	96%	96%
<sup>A</sup> Netherlands	46%	75%	100%	100%	97%	45%
<sup>†</sup> Norway (5)	70%	90%	100%	100%	93%	65%
Portugal	87%	100%	99%	99%	94%	81%
Qatar	100%	100%	100%	100%	97%	97%
Russian Federation	99%	99%	100%	100%	98%	97%
Singapore	100%	100%	100%	100%	97%	97%
Slovak Republic	97%	99%	100%	100%	96%	93%
Spain	97%	99%	100%	100%	95%	92%
Sweden	100%	100%	100%	100%	94%	94%
Turkey (5)	99%	100%	100%	100%	99%	98%
United Arab Emirates	100%	100%	100%	100%	96%	95%
<sup>†</sup> United States	76%	88%	100%	100%	95%	73%
Benchmarking Participants						
Ontario, Canada	93%	95%	100%	100%	94%	87%
Quebec, Canada	82%	86%	100%	100%	96%	79%

	Before Replacement	After Replacement			Before Replacement	After Replacement
Chile	90%	99%	100%	100%	95%	86%
Chinese Taipei	98%	99%	100%	100%	98%	95%
England	83%	90%	100%	100%	94%	78%
Finland	100%	100%	100%	100%	95%	95%
France	100%	100%	100%	100%	96%	96%
Georgia	90%	92%	100%	100%	97%	87%
<sup>†</sup> Hong Kong SAR	70%	86%	100%	100%	93%	65%
Hungary	95%	99%	100%	100%	96%	91%
Israel	95%	98%	100%	100%	92%	87%
Italy	97%	100%	100%	100%	97%	93%
Korea, Rep. of	100%	100%	100%	100%	97%	97%
Lithuania	99%	99%	100%	100%	92%	92%
Malaysia	99%	100%	100%	100%	98%	97%
<sup>†</sup> Norway (9)	79%	95%	99%	99%	88%	68%
Portugal	95%	99%	99%	99%	95%	89%
Qatar	100%	100%	100%	100%	97%	97%
Russian Federation	99%	100%	100%	100%	97%	97%
Singapore	100%	100%	100%	100%	96%	96%
Sweden	98%	99%	100%	100%		

CHAPTER 17: SCALING AND REPORTING THE PROBLEM SOLVING AND INQUIRY DATA

	School Pa	rticipation	Class	Student	Overall Participation		
Country	Before After Replacement Replacement		Participation	Participation	Before Replacement	After Replacement	
Chile	88%	98%	100%	100%	95%	84%	
Chinese Taipei	98%	99%	100%	100%	98%	95%	
England	83%	90%	100%	100%	94%	78%	
Finland	100%	100%	100%	100%	95%	95%	
France	100%	100%	100%	100%	96%	96%	
Georgia	90%	92%	100%	100%	97%	87%	
Hong Kong SAR	71%	86%	100%	100%	93%	66%	
Hungary	94%	99%	100%	100%	96%	91%	
Israel	94%	98%	100%	100%	92%	87%	
Italy	97%	100%	100%	100%	97%	94%	
Korea, Rep. of	100%	100%	100%	100%	97%	97%	
Lithuania	99%	99%	100%	100%	92%	92%	
Malaysia	99%	100%	100%	100%	98%	97%	
Norway (9)	80%	95%	98%	98%	89%	70%	
Portugal	94%	99%	99%	99%	95%	88%	
Qatar	100%	100%	100%	100%	97%	97%	
Russian Federation	100%	100%	100%	100%	97%	97%	
Singapore	100%	100%	100%	100%	96%	96%	
Sweden	99%	99%	100%	100%	91%	89%	
Turkey	99%	100%	100%	100%	98%	98%	
United Arab Emirates	100%	100%	100%	100%	95%	95%	
United States	72%	85%	100%	100%	93%	67%	
enchmarking Participants							
Ontario, Canada	92%	93%	100%	100%	93%	86%	
Quebec, Canada	74%	77%	99%	99%	94%	69%	
Moscow City, Russian Fed.	97%	99%	100%	100%	97%	94%	
Abu Dhabi, UAE	100%	100%	100%	100%	95%	95%	
Dubai, UAE	100%	100%	100%	100%	96%	96%	

## Participation Rates (Unweighted) - eTIMSS 2019 with Problem Solving and Inquiry-Grade 8

Country	Number of Schools in Original Sample	Number of Eligible Schools	Number of Schools in Original Sample that Participated	Number of Replacement Schools that Participated	Total Number of Schools that Participated
Austria	197	194	193	0	193
Canada	788	777	669	35	704
Chile	174	172	151	18	169
Chinese Taipei	163	163	155	7	162
Croatia	159	158	150	3	153
Czech Republic	156	152	151	1	152
Denmark	175	174	123	43	166
England	150	150	129	10	139
Finland	159	158	157	1	158
France	156	155	155	0	155
Georgia	158	157	151	3	154
Germany	206	203	198	5	203
Hong Kong SAR	159	159	109	30	139
Hungary	151	150	139	10	149
Italy	162	162	153	9	162
Korea, Rep. of	152	152	151	0	151
Lithuania	208	207	207	0	207
Malta	99	98	98	0	98
Netherlands	151	149	71	41	112
Norway (5)	167	167	119	31	150
Portugal	182	181	158	23	181
Qatar	242	242	242	0	242
Russian Federation	202	202	200	0	200
Singapore	187	187	187	0	187
Slovak Republic	159	158	153	4	157
Spain	502	502	494	7	501
Sweden	150	145	144	1	145
Turkey (5)	181	180	179	1	180
United Arab Emirates	697	688	688	0	688
United States	329	325	249	38	287
enchmarking Participants					
Ontario, Canada	171	170	160	3	163
Quebec, Canada	172	172	140	8	148
Moscow City, Russian Fed.	152	151	148	2	150
Madrid, Spain	167	167	167	0	167
Abu Dhabi, UAE	249	247	247	0	247
Dubai, UAE	205	199	199	0	199

## School Sample Sizes - eTIMSS 2019 with Problem Solving and Inquiry-Grade 4

Canada94%17,23119942916,603102115,582Chile95%5,209771125,0202454,775Chinese Taipei598%5 17 J3 600651571 td36 675raTc7(64,370487 cnTa75) 17 J18d f829585CroatiaT7s (T79 09)Tj 4.95996%56 0 18 17s 5,07309)Tj 4.959812769,5.76483 (466.44) 84 761 0 (1512) 15.54) 44,3358CroatiaT7s (T79 09)Tj 4.95995%5,76748535,6663085,358Czech Republic95%5,76748535,6663085,358Denmark86%4,41467484,2996063,69344fand95%4,268781274,0631913,872FinlandEngnd675 0 Td (90%)Tj365 0 T5,679351044,9401484,792Georgia97%5,079351044,9401484,316Georgia96%4,22051894,0801473,933Hong Kong SAR89%3,932181013,8134273,386Hungary96%5,55134895,4282015,227									
Canada94%17,23119942916,603102115,582Chile95%5,209771125,0202454,775Chinese Taipei598%5 17 14 98994,500651571 td36 97raTc7(64,370487 cnTa75) 17 14 dt 4397 85CroatiaT7s (T79 09)Tj 4.95930%56 0 18 17s 5,07309)Tj 4.959812769,5.76483 (466.44)84761 0 (1512) 15.54) 44,3358Czech Republic95%5,76748535,6663085,358Denmark86%4,41467484,2996063,6934.49and95%4,268781274,0631913,872Finland95%4,268781274,0631913,872Finland95%4,268781274,0631913,872Finland95%4,268781274,0631913,872Finland96%4,57528834,4641484,316Edergia97%5,079351044,9401484,316Edergia97%4,57528834,4641484,316Edergia96%4,22051894,0801473,933Hong Kong SAR89%3,932181013,8134273,386Hungary96%5,55134895,4282015,227taly96%4,664221994,4431744,269 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
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Chinese Taipei598% 5 IT J5 area4,50065 15Ti td36 657aTc7(64) 370487 cnT370 IT J18d fe29 fasCroatiaT7s (T79 09)Tj 4.959 8 J0%56 0 18 T7s (J073 09)Tj 4.959 812769,5.76548 3 (466.41) 4 481 0 1 (1512 T) 5.54) 4 4,358 3Czech Republic95%5,76748535,6663085,358Denmark86%4,41467484,2996063,6934 fgland95%4,268781274,0631913,872FinlandEngnd675 0 Td (90%)Tj5,679351044,9401484,792Georgia97%5,079351044,9401484,316Vermany96%4,22051894,0801473,933Hong Kong SAR89%3,932181013,8134273,386Hungary96%5,55134895,4282015,227taly96%4,664221994,4431744,269	Canada		94%	17,231	199	429	16,603	1021	15,582
Czech Republic 95% 5,767 48 53 5,666 308 5,358   Denmark 86% 4,414 67 48 4,299 606 3,693   Engnd675 0 Td (90%)Tj 95% 4,268 78 127 4,063 191 3,872   France 97% 5,079 35 104 4,940 148 4,792   Georgia 97% 4,575 28 83 4,464 148 4,316   Hong Kong SAR 96% 4,220 51 89 4,080 147 3,933   Hungary 96% 5,551 34 89 5,428 201 5,227   taly 96% 4,664 22 199 4,443 174 4,269	Chile		95%	5,209	77	112	5,020	245	4,775
Czech Republic 95% 5,767 48 53 5,666 308 5,358   Denmark 86% 4,414 67 48 4,299 606 3,693   Engnd675 0 Td (90%)Tj 95% 4,268 78 127 4,063 191 3,872   France 97% 5,079 35 104 4,940 148 4,792   Georgia 97% 4,575 28 83 4,464 148 4,316   Hong Kong SAR 96% 4,220 51 89 4,080 147 3,933   Hungary 96% 5,551 34 89 5,428 201 5,227   taly 96% 4,664 22 199 4,443 174 4,269	Chinese Ta	ipei	5929785 ]TJ5	88298 4,500	<sup>65</sup> 15T	i td36.997i raT	c7(69:3709487	cnT8750_ITJ	18d. (83997i85
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#rigland95%4,268781274,0631913,872FinlandEngnd675 0 Td (90%)Tj7,8% 3j4.956 0 Tej (645)3 (T79 0 Tej (18)Tj5.765 0 Td (199) Tj7,663 1580 Td (165,)3 (397) tej (199) 0 TFrance97%5,079351044,9401484,792Georgia97%4,57528834,4641484,316Umany96%4,22051894,0801473,933Hong Kong SAR89%3,932181013,8134273,386Hungary96%5,55134895,4282015,227taly96%4,664221994,4431744,269	Czech Rep	ublic	95%	5,767	48	53	5,666	308	5,358
FinlandEngnd675 0 Td (90%)Tj 3 34 3j 4.956 0 Te 665 3j 4.956 0 Te 665 3j 4.976 0 Te 665 3j 4.97	Denmark		86%	4,414	67	48	4,299	606	3,693
France97%5,079351044,9401484,792Georgia97%4,57528834,4641484,316Vermany96%4,22051894,0801473,933Hong Kong SAR89%3,932181013,8134273,386Hungary96%5,55134895,4282015,227taly96%4,664221994,4431744,269	€ngland								3,872
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Hong Kong SAR89%3,932181013,8134273,386Hungary96%5,55134895,4282015,227taly96%4,664221994,4431744,269	Georgia		97%	4,575	28	83	4,464	148	4,316
Hungary96%5,55134895,4282015,227taly96%4,664221994,4431744,269	67efmany		96%	4,220	51	89	4,080	147	3,933
taly 96% 4,664 22 199 4,443 174 4,269	Hong Kong	SAR	89%	3,932	18	101	3,813	427	3,386
· · · · · ·	Hungary		96%	5,551	34	89	5,428	201	5,227
Korea, Rep14714728834, Tc7(51)Tj 6.324 0 Td654,464	Italy		96%	4,664	22	199	4,443	174	4,269
	Korea, Rep	14714728834, Tc7(51	)Tj 6.324 0 Td6	654,464					

Country	Within-School Student Participation (Weighted Pe0.163 63(0.r)	-1.4-11 (-)-4	Number of Students Withdrawn from Class/ (Sc)Schi(b) (e	Number of Students Excluded e)6.9 (d)-2.3 <i>A</i>	viorticedio B6	6 ()]TJ 5.77	79 0 T3505 <sup>-</sup>
Chile	95%	5,085	68	76	4,941	244	4,697
Chinese Taipei	Stude <b>98%</b>	5,901	106	42	5,753	143	5,610
England	94%	4,310	140	70	4,100	242	3,858
Finland	95%	5,979	62	62	5,855	285	5,570
France	96%	4,700	53	49	4,598	172	4,426
Georgia	97%	4,031	37	73	3,921	132	3,789
Hong Kong SAR	93%	4,115	12	73	4,030	300	3,730
Hungary	96%	5,540	23	86	5,431	212	5,219
Israel	92%	4,737	36	51	4,650	381	4,269
Italy	97%	4,456	22	153	4,281	143	4,138
Korea, Rep. of	97%	4,593	18	37	4,538	129	4,409
Lithuania	92%	4,843	19	98	4,726	360	4,366
Malaysia	98%	8,354	120	0	8,234	157	8,077
Norway (9)	88%	6,069	41	141	5,887	671	5,216
Portugal	95%	4,268	32	152	4,084	217	3,867
Qatar	97%	4,767	138	32	4,597	160	4,437
Russian Federation	97%	4,692	28	76	4,588	132	4,456
Singapore	96%	5,797	19	0	5,778	232	5,546
Sweden	91%	5,313	64	213	5,036	471	4,565
Turkey	98%	4,971	111	123	4,737	75	4,662
United Arab Emirates	95%	27,322	251	315	26,756	1217	25,539
United States	93%	11,270	307	242	10,721	777	9,944
Benchmarking Participants							
Ontario, Canada	94%	4,779	63	75	4,641	311	4,330
Quebec, Canada	94%	3,895	28	7	3,860	222	3,638
Moscow City, Russian Fed.	97%	4,517	21	19	4,477	153	4,324
Abu Dhabi, UAE	95%	9,997	41	86	9,870	490	9,380
Dubai, UAE	96%	7,164	199	141	6,824	280	6,544

## Student Sample Sizes - eTIMSS 2019 with Problem Solving and Inquiry-Grade 8