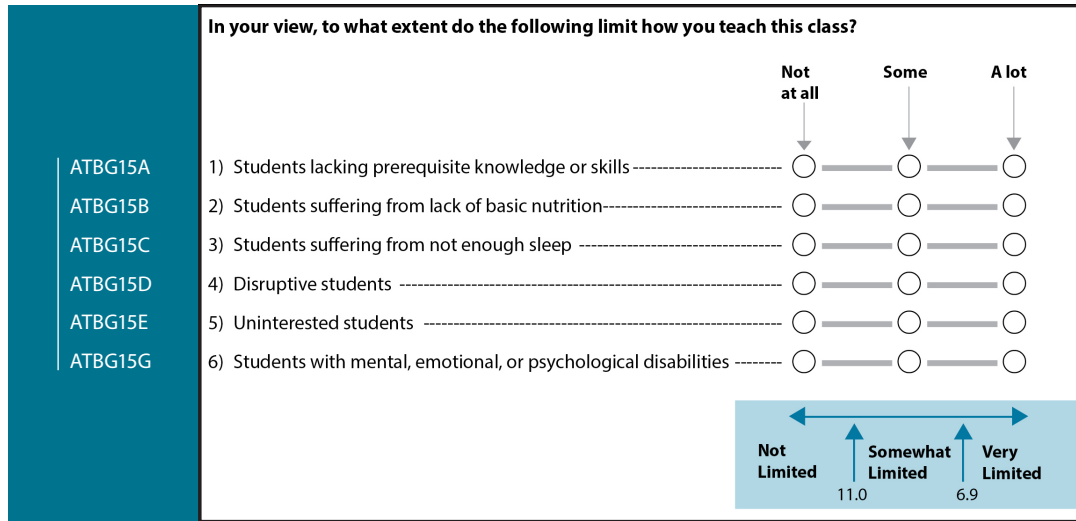


Teaching Limited by Student Needs Scale, Fourth Grade

The Teaching Limited by Student Needs (LSN) scale was created based on teachers' responses concerning six needs described below.

Items in the TIMSS 2015 Teaching Limited by Student Needs Scale, Fourth Grade



Item Parameters for the TIMSS 2015 Teaching Limited by Student Needs Scale, Fourth Grade

Item	delta	tau_1	tau_2	Infit
ATBG15A	0.90362	-2.02080	2.02080	1.02
ATBG15B	-1.27753	-1.05996	1.05996	1.04
ATBG15C	-0.43516	-1.62325	1.62325	0.98
ATBG15D	0.58656	-1.51840	1.51840	0.97
ATBG15E	0.51242	-1.88467	1.88467	0.92
ATBG15G	-0.28991	-1.50177	1.50177	1.10

Scale Transformation Constants for the TIMSS 2015 Teaching Limited by Student Needs Scale, Fourth Grade

Scale Transformation Constants	
A = 8.964842	Transformed Scale Score = 8.964842 + 1.203519 • Logit Scale Score
B = 1.203519	

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

**Equivalence Table of Raw and Transformed Scale Scores for the TIMSS
2015 Teaching Limited by Student Needs Scale, Fourth Grade**

Raw Score	Transformed Scale Score	Cutpoint
0	3.80319	
1	5.34054	
2	6.20203	
3	6.88260	6.9
4	7.50773	
5	8.12884	
6	8.78577	
7	9.50093	
8	10.26124	
9	11.04392	11.0
10	11.87401	
11	12.86225	
12	14.51024	

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



Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2015 Teaching Limited by Student Needs Scale, Fourth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ATBG15A	ATBG15B	ATBG15C	ATBG15D	ATBG15E	ATBG15G
Australia	0.78	48	0.64	0.71	0.68	0.74	0.70	0.67
Bahrain	0.77	47	0.67	0.52	0.63	0.77	0.77	0.71
Belgium (Flemish)	0.67	38	0.66	0.45	0.68	0.63	0.68	0.57
Bulgaria	0.70	41	0.59	0.52	0.66	0.68	0.77	0.58
Canada	0.73	43	0.68	0.69	0.73	0.61	0.59	0.62
Chile	0.79	49	0.60	0.77	0.73	0.63	0.77	0.67
Chinese Taipei	0.78	48	0.59	0.70	0.71	0.75	0.74	0.64
Croatia	0.75	45	0.49	0.63	0.71	0.74	0.77	0.65
Cyprus	0.77	46	0.50	0.61	0.75	0.75	0.76	0.68
Czech Republic	0.63	35	0.70	0.28	0.44	0.65	0.72	0.64
Denmark	0.77	48	0.68	0.59	0.67	0.77	0.75	0.67
England	0.79	50	0.60	0.69	0.74	0.74	0.71	0.74
Finland	0.72	42	0.67	0.48	0.58	0.74	0.72	0.66
France	0.70	40	0.59	0.48	0.71	0.73	0.67	0.59
Georgia	0.69	39	0.59	0.57	0.67	0.71	0.58	0.63
Germany	0.74	44	0.69	0.60	0.70	0.68	0.58	0.71
Hong Kong SAR	0.71	41	0.67	0.49	0.60	0.66	0.70	0.69
Hungary	0.77	47	0.72	0.68	0.75	0.66	0.67	0.63
Indonesia	0.59	34	0.43	0.61	0.71	0.56	0.69	0.40
Iran, Islamic Rep. of	0.77	46	0.52	0.68	0.66	0.79	0.66	0.74
Ireland	0.75	44	0.61	0.74	0.66	0.67	0.71	0.58
Italy	0.81	52	0.69	0.73	0.75	0.79	0.72	0.63
Japan	0.75	44	0.71	0.27	0.69	0.76	0.75	0.69
Jordan	0.68	39	0.60	0.53	0.52	0.69	0.71	0.68
Kazakhstan	0.79	48	0.62	0.75	0.75	0.76	0.71	0.56
Korea, Rep. of	0.82	53	0.61	0.64	0.76	0.76	0.77	0.79
Kuwait	0.68	40	0.60	0.50	0.65	0.75	0.76	0.44
Lithuania	0.75	44	0.70	0.50	0.56	0.79	0.72	0.70
Morocco	0.70	40	0.64	0.59	0.59	0.73	0.69	0.56
Netherlands	0.73	42	0.57	0.61	0.62	0.72	0.73	0.63
New Zealand	0.79	48	0.59	0.75	0.80	0.72	0.58	0.71
Northern Ireland	0.75	46	0.65	0.65	0.79	0.54	0.75	0.65
Norway (5)	0.76	47	0.49	0.72	0.73	0.67	0.80	0.66
Oman	0.78	47	0.65	0.69	0.70	0.78	0.70	0.59
Poland	0.71	41	0.69	0.42	0.67	0.65	0.72	0.64
Portugal	0.76	46	0.61	0.73	0.72	0.69	0.71	0.61
Qatar	0.71	41	0.59	0.60	0.69	0.68	0.80	0.44
Russian Federation	0.81	51	0.60	0.73	0.82	0.75	0.67	0.70
Saudi Arabia	0.68	39	0.54	0.61	0.59	0.72	0.74	0.49
Serbia	0.72	42	0.63	0.57	0.65	0.74	0.75	0.56
Singapore	0.77	47	0.64	0.70	0.71	0.68	0.68	0.71
Slovak Republic	0.82	54	0.70	0.56	0.73	0.85	0.78	0.74
Slovenia	0.69	40	0.45	0.57	0.65	0.72	0.76	0.56
South Africa (5)	0.76	45	0.64	0.63	0.66	0.68	0.78	0.63
Spain	0.76	45	0.70	0.47	0.68	0.74	0.75	0.66
Sweden	0.75	45	0.66	0.53	0.67	0.76	0.71	0.65
Turkey	0.73	43	0.66	0.65	0.66	0.70	0.73	0.51
United Arab Emirates	0.76	45	0.66	0.62	0.67	0.75	0.75	0.56
United States	0.78	48	0.69	0.70	0.72	0.72	0.74	0.60
Benchmarking Participants								
Buenos Aires, Argentina	0.81	51	0.60	0.78	0.73	0.70	0.72	0.72
Ontario, Canada	0.74	43	0.67	0.65	0.69	0.62	0.69	0.64
Quebec, Canada	0.58	34	0.67	0.70	0.77	0.49	0.20	0.46
Norway (4)	0.75	45	0.66	0.69	0.71	0.74	0.69	0.51
Abu Dhabi, UAE	0.76	46	0.68	0.52	0.66	0.76	0.74	0.67
Dubai, UAE	0.71	41	0.63	0.68	0.60	0.74	0.68	0.47
Florida, US	0.80	50	0.73	0.67	0.70	0.75	0.82	0.54

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

Relationship Between the TIMSS 2015 Teaching Limited by Student Needs Scale, Fourth Grade, and TIMSS 2015 Achievement

Country	Pearson's Correlation with Achievement				Variance in Achievement Accounted for by Difference Between Regions of the Scale (η^2)	
	(r)		(r ²)		Mathematics	Science
	Mathematics	Science	Mathematics	Science		
Australia	0.28	0.23	0.08	0.05	0.07	0.04
Bahrain	0.09	0.07	0.01	0.00	0.01	0.01
Belgium (Flemish)	0.16	0.18	0.02	0.03	0.02	0.02
Bulgaria	0.19	0.21	0.03	0.05	0.01	0.02
Canada	0.24	0.20	0.06	0.04	0.06	0.04
Chile	0.23	0.27	0.05	0.07	0.06	0.07
Chinese Taipei	0.08	0.02	0.01	0.00	0.01	0.00
Croatia	0.01	0.01	0.00	0.00	0.00	0.00
Cyprus	0.10	0.07	0.01	0.00	0.01	0.00
Czech Republic	0.09	0.09	0.01	0.01	0.01	0.01
Denmark	0.14	0.13	0.02	0.02	0.02	0.01
England	0.26	0.19	0.07	0.04	0.04	0.03
Finland	0.15	0.17	0.02	0.03	0.02	0.02
France	0.19	0.20	0.04	0.04	0.01	0.02
Georgia	0.14	0.14	0.02	0.02	0.02	0.02
Germany	0.18	0.20	0.03	0.04	0.03	0.04
Hong Kong SAR	0.22	0.17	0.05	0.03	0.04	0.02
Hungary	0.21	0.22	0.04	0.05	0.03	0.04
Indonesia	0.14	0.08	0.02	0.01	0.01	0.01
Iran, Islamic Rep. of	0.16	0.17	0.03	0.03	0.02	0.02
Ireland	0.19	0.21	0.04	0.04	0.03	0.03
Italy	0.08	0.05	0.01	0.00	0.01	0.00
Japan	0.09	0.06	0.01	0.00	0.00	0.00
Jordan	0.11	-	0.01	-	0.01	-
Kazakhstan	0.17	0.17	0.03	0.03	0.02	0.02
Korea, Rep. of	0.06	0.05	0.00	0.00	0.01	0.00
Kuwait	0.18	0.16	0.03	0.03	0.03	0.02
Lithuania	0.11	0.09	0.01	0.01	0.01	0.01
Morocco	0.14	0.18	0.02	0.03	0.01	0.03
Netherlands	0.14	0.16	0.02	0.03	0.02	0.03
New Zealand	0.27	0.26	0.07	0.07	0.07	0.06
Northern Ireland	0.22	0.20	0.05	0.04	0.04	0.03
Norway (5)	0.12	0.13	0.01	0.02	0.01	0.01
Oman	-0.04	-0.02	0.00	0.00	0.00	0.00
Poland	0.16	0.09	0.03	0.01	0.01	0.00
Portugal	0.14	0.11	0.02	0.01	0.02	0.01
Qatar	0.24	0.23	0.06	0.05	0.03	0.03
Russian Federation	0.12	0.13	0.01	0.02	0.02	0.02
Saudi Arabia	0.16	0.11	0.03	0.01	0.03	0.02
Serbia	0.05	0.04	0.00	0.00	0.00	0.00
Singapore	0.40	0.34	0.16	0.12	0.12	0.08
Slovak Republic	0.21	0.25	0.04	0.06	0.03	0.04
Slovenia	0.01	0.02	0.00	0.00	0.00	0.00
South Africa (5)	0.08	-	0.01	-	0.01	-
Spain	0.24	0.23	0.06	0.05	0.03	0.03
Sweden	0.18	0.20	0.03	0.04	0.04	0.04
Turkey	0.14	0.14	0.02	0.02	0.02	0.02
United Arab Emirates	0.33	0.34	0.11	0.11	0.09	0.09
United States	0.21	0.22	0.04	0.05	0.04	0.05
International Median	0.16	0.17	0.02	0.03	0.02	0.02
Benchmarking Participants						
Buenos Aires, Argentina	0.21	0.19	0.04	0.04	0.06	0.07
Ontario, Canada	0.16	0.14	0.03	0.02	0.02	0.02
Quebec, Canada	0.21	0.19	0.04	0.04	0.04	0.03
Norway (4)	0.09	0.10	0.01	0.01	0.01	0.01
Abu Dhabi, UAE	0.32	0.34	0.10	0.11	0.08	0.07
Dubai, UAE	0.28	0.26	0.08	0.07	0.08	0.05
Florida, US	0.31	0.28	0.09	0.08	0.04	0.03

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

A dash (-) indicates comparable data not available.