

TIMSS 2011

The TIMSS 2011 Students Engaged in Mathematics Lessons Scale, Eighth Grade

The Students Engaged in Mathematics Lessons (EML) scale was created based on students' degree of agreement to the five statements described below. See [Creating and Interpreting TIMSS and PIRLS 2011 Context Questionnaire Scales](#) for more information on how the scales were formed.

Exhibit 1: Items in the TIMSS 2011 Students Engaged in Mathematics Lessons Scale, Eighth Grade

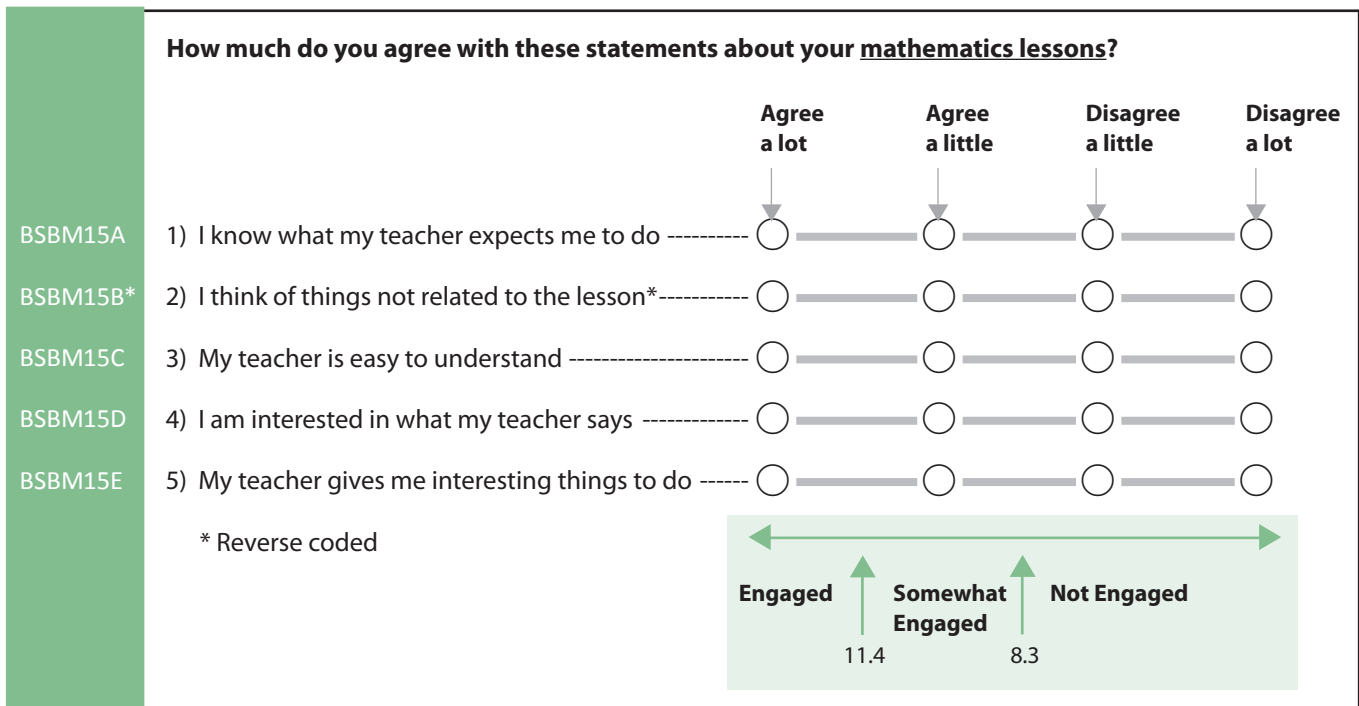


Exhibit 2: Item Parameters for the TIMSS 2011 Students Engaged in Mathematics Lessons Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3
BSBM15A	-1.26308	-0.51733	-0.67273	1.19006
BSBM15B*	-0.23700	-1.26381	0.37023	0.89358
BSBM15C	-1.01593	-0.71817	-0.28115	0.99932
BSBM15D	-1.07835	-0.81524	-0.20383	1.01907
BSBM15E	-0.57177	-0.82321	-0.13511	0.95832

*Reverse coded

Exhibit 3: Scale Transformation Constants

Scale Transformation Constants

$$A = 10.01210$$

$$B = 1.69426$$

$$\text{Transformed Scale Score} = 10.01210 + 1.69426 \cdot \text{Logit Scale Score}$$

Exhibit 4: Equivalence Table of the Raw Score and the Transformed Scale Score

Raw Score	Transformed Scale Score	Cutpoint	Raw Score	Transformed Scale Score	Cutpoint
0	3.26515		8	8.70884	
1	5.01998		9	9.15641	
2	5.86845		10	9.63460	
3	6.47491		11	10.15325	
4	6.97719		12	10.74331	
5	7.42878		13	11.44902	11.4
6	7.85736		14	12.42203	
7	8.27843	8.3	15	14.34296	

Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Students Engaged in Mathematics Lessons Scale, Eighth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BSBM15A	BSBM15B*	BSBM15C	BSBM15D	BSBM15E
Armenia	0.64	46	0.43	0.37	0.77	0.84	0.83
Australia	0.77	54	0.68	0.40	0.80	0.85	0.83
Bahrain	0.68	47	0.69	0.28	0.76	0.78	0.78
Chile	0.71	48	0.65	0.36	0.75	0.79	0.81
Chinese Taipei	0.77	53	0.68	0.49	0.81	0.86	0.73
England	0.77	55	0.72	0.39	0.80	0.84	0.83
Finland	0.76	52	0.57	0.54	0.77	0.85	0.82
Georgia	0.60	41	0.55	0.32	0.77	0.65	0.80
Ghana	0.44	35	0.56	0.13	0.66	0.71	0.71
Hong Kong SAR	0.76	55	0.72	0.21	0.85	0.89	0.84
Hungary	0.74	51	0.60	0.48	0.78	0.83	0.81
Indonesia	0.62	42	0.54	0.31	0.74	0.80	0.74
Iran, Islamic Rep. of	0.66	45	0.53	0.44	0.76	0.81	0.72
Israel	0.72	49	0.60	0.49	0.76	0.82	0.77
Italy	0.73	49	0.55	0.59	0.70	0.81	0.80
Japan	0.74	52	0.67	0.33	0.78	0.87	0.83
Jordan	0.58	41	0.60	0.31	0.75	0.73	0.71
Kazakhstan	0.66	45	0.57	0.41	0.69	0.80	0.79
Korea, Rep. of	0.78	54	0.60	0.60	0.78	0.85	0.80
Lebanon	0.65	45	0.59	0.23	0.76	0.82	0.77
Lithuania	0.74	51	0.68	0.45	0.76	0.81	0.80
Macedonia, Rep. of	0.65	44	0.59	0.37	0.70	0.80	0.78

Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Students Engaged in Mathematics Lessons Scale, Eighth Grade (Continued)

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BSBM15A	BSBM15B*	BSBM15C	BSBM15D	BSBM15E
Malaysia	0.73	51	0.70	0.32	0.78	0.83	0.81
Morocco	0.53	37	0.51	0.40	0.66	0.69	0.70
New Zealand	0.77	54	0.69	0.33	0.82	0.87	0.85
Norway	0.76	52	0.62	0.53	0.75	0.83	0.82
Oman	0.56	40	0.49	0.35	0.74	0.75	0.70
Palestinian Nat'l Auth.	0.60	41	0.53	0.39	0.74	0.74	0.72
Qatar	0.73	52	0.75	0.25	0.81	0.82	0.80
Romania	0.71	48	0.57	0.45	0.75	0.83	0.78
Russian Federation	0.74	51	0.51	0.52	0.79	0.85	0.81
Saudi Arabia	0.62	42	0.60	0.38	0.73	0.78	0.69
Singapore	0.77	56	0.72	0.31	0.84	0.87	0.83
Slovenia	0.73	50	0.68	0.44	0.76	0.79	0.78
Sweden	0.73	50	0.55	0.44	0.76	0.84	0.84
Syrian Arab Republic	0.58	40	0.52	0.33	0.71	0.75	0.76
Thailand	0.65	45	0.55	0.28	0.77	0.78	0.80
Tunisia	0.62	42	0.52	0.48	0.69	0.77	0.72
Turkey	0.60	41	0.67	0.44	0.73	0.78	0.52
Ukraine	0.70	48	0.50	0.51	0.74	0.84	0.79
United Arab Emirates	0.68	47	0.60	0.32	0.77	0.80	0.80
United States	0.76	53	0.66	0.40	0.81	0.86	0.82
Ninth Grade Participants							
Botswana	0.60	40	0.53	0.37	0.70	0.75	0.72
Honduras	0.58	42	0.51	0.25	0.72	0.77	0.80
South Africa	0.59	42	0.62	0.17	0.70	0.77	0.78
Benchmarking Participants							
Alberta, Canada	0.76	54	0.71	0.33	0.81	0.85	0.83
Ontario, Canada	0.74	52	0.66	0.39	0.80	0.84	0.81
Quebec, Canada	0.77	53	0.60	0.53	0.77	0.85	0.83
Abu Dhabi, UAE	0.67	47	0.63	0.25	0.78	0.80	0.79
Dubai, UAE	0.71	49	0.63	0.34	0.78	0.82	0.81
Alabama, US	0.74	52	0.64	0.36	0.81	0.85	0.81
California, US	0.75	52	0.67	0.35	0.81	0.86	0.80
Colorado, US	0.78	55	0.70	0.35	0.83	0.87	0.84
Connecticut, US	0.75	53	0.66	0.37	0.81	0.86	0.83
Florida, US	0.73	50	0.64	0.34	0.78	0.85	0.82
Indiana, US	0.76	53	0.68	0.37	0.80	0.86	0.82
Massachusetts, US	0.77	54	0.68	0.40	0.81	0.86	0.82
Minnesota, US	0.75	52	0.62	0.41	0.79	0.85	0.83
North Carolina, US	0.75	52	0.64	0.38	0.81	0.85	0.83

*Reverse Coded

Exhibit 6: Relationship Between the TIMSS 2011 Students Engaged in Mathematics Lessons Scale, Eighth Grade, and TIMSS 2011 Mathematics Achievement

Country	Pearson's Correlation with Mathematics Achievement		Variance in Mathematics Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Armenia	0.16	0.03	0.03
Australia	0.23	0.05	0.05
Bahrain	0.13	0.02	0.02
Chile	0.11	0.01	0.01
Chinese Taipei	0.35	0.12	0.09
England	0.22	0.05	0.04
Finland	0.22	0.05	0.04
Georgia	0.19	0.04	0.03
Ghana	0.20	0.04	0.04
Hong Kong SAR	0.27	0.07	0.06
Hungary	0.13	0.02	0.02
Indonesia	-0.08	0.01	0.01
Iran, Islamic Rep. of	0.03	0.00	0.00
Israel	0.08	0.01	0.01
Italy	0.19	0.03	0.03
Japan	0.23	0.05	0.03
Jordan	0.22	0.05	0.06
Kazakhstan	0.11	0.01	0.01
Korea, Rep. of	0.34	0.11	0.08
Lebanon	0.10	0.01	0.01
Lithuania	0.09	0.01	0.01
Macedonia, Rep. of	0.12	0.01	0.02
Malaysia	0.01	0.00	0.00
Morocco	0.14	0.02	0.02
New Zealand	0.16	0.03	0.03
Norway	0.24	0.06	0.05
Oman	0.26	0.07	0.07
Palestinian Nat'l Auth.	0.21	0.04	0.04
Qatar	0.18	0.03	0.03
Romania	0.18	0.03	0.03
Russian Federation	0.19	0.04	0.03
Saudi Arabia	0.20	0.04	0.04
Singapore	0.11	0.01	0.01
Slovenia	0.13	0.02	0.01
Sweden	0.21	0.04	0.03

Exhibit 6: Relationship Between the TIMSS 2011 Students Engaged in Mathematics Lessons Scale, Eighth Grade, and TIMSS 2011 Mathematics Achievement (Continued)

Country	Pearson's Correlation with Mathematics Achievement		Variance in Mathematics Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Syrian Arab Republic	0.13	0.02	0.02
Thailand	0.01	0.00	0.00
Tunisia	0.06	0.00	0.01
Turkey	0.25	0.06	0.06
Ukraine	0.15	0.02	0.02
United Arab Emirates	0.11	0.01	0.02
United States	0.09	0.01	0.01
International Median	0.16	0.03	0.03
Ninth Grade Participants			
Botswana	0.23	0.05	0.05
Honduras	0.02	0.00	0.01
South Africa	0.07	0.01	0.01
Benchmarking Participants			
Alberta, Canada	0.15	0.02	0.02
Ontario, Canada	0.18	0.03	0.03
Quebec, Canada	0.14	0.02	0.02
Abu Dhabi, UAE	0.16	0.02	0.03
Dubai, UAE	0.06	0.00	0.01
Alabama, US	0.01	0.00	0.00
California, US	0.09	0.01	0.01
Colorado, US	0.23	0.05	0.04
Connecticut, US	0.20	0.04	0.04
Florida, US	0.11	0.01	0.01
Indiana, US	0.14	0.02	0.01
Massachusetts, US	0.10	0.01	0.01
Minnesota, US	0.19	0.04	0.03
North Carolina, US	0.10	0.01	0.01