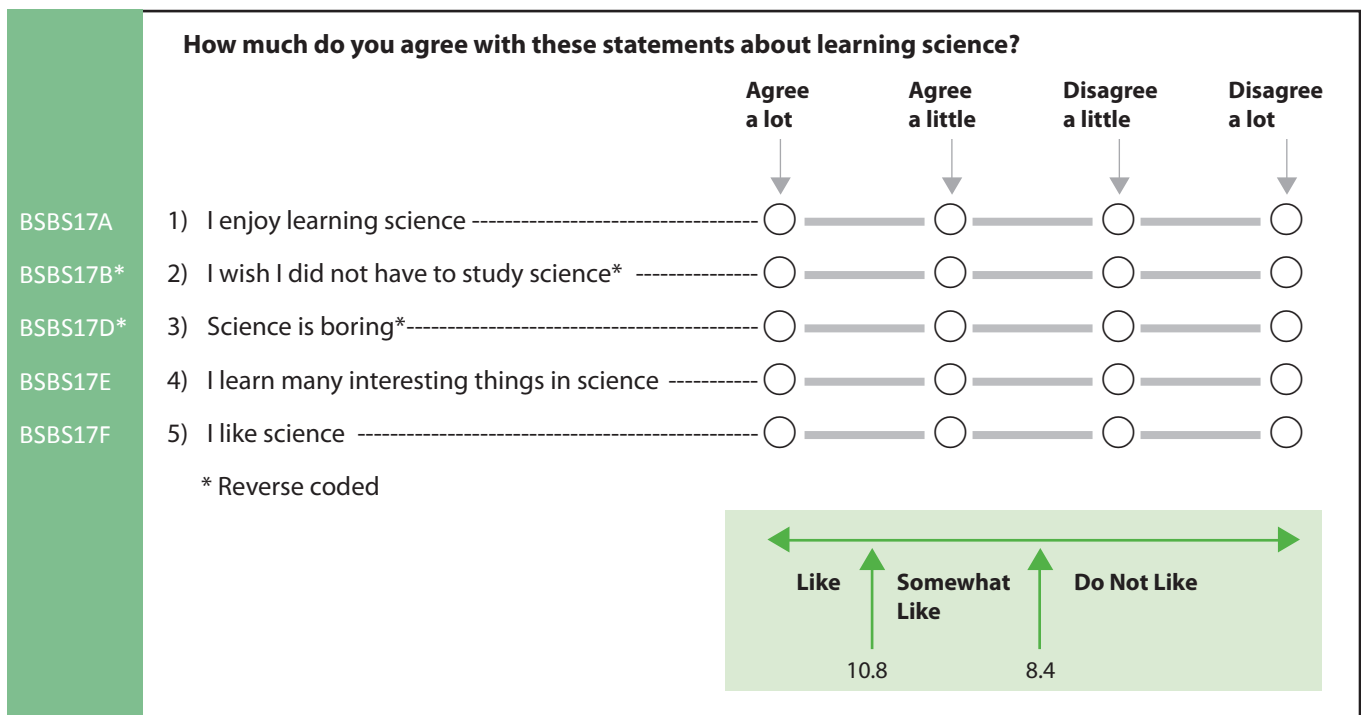


## TIMSS 2011

# The TIMSS 2011 Students Like Learning Science Scale, Eighth Grade

The Students Like Learning Science (SLS) 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 Like Learning Science Scale, Eighth Grade



**Exhibit 2: Item Parameters for the TIMSS 2011 Students Like Learning Science Scale, Eighth Grade**

Item	delta	tau_1	tau_2	tau_3
BSBS17A	-1.55307	-1.13704	-0.47974	1.61678
BSBS17B*	-0.99338	-1.24094	0.07273	1.16821
BSBS17D*	-0.95533	-1.37984	0.05296	1.32688
BSBS17E	-1.91782	-1.05837	-0.44985	1.50822
BSBS17F	-1.29350	-1.10272	-0.37092	1.47364

\*Reverse coded

**Exhibit 3: Scale Transformation Constants**

Scale Transformation Constants

A = 10.12064

B = 1.14604

Transformed Scale Score = 10.12064 + 1.14604 • 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	4.51274		8	8.67804	
1	5.78990		9	9.03893	
2	6.42608		10	9.41832	
3	6.89527		11	9.82743	
4	7.28866		12	10.27988	
5	7.64598		13	10.82037	10.8
6	7.98897		14	11.54992	
7	8.32900	8.4	15	12.94370	

**Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Students Like Learning Science Scale, Eighth Grade**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BSBS17A	BSBS17B*	BSBS17D*	BSBS17E	BSBS17F
Australia	0.90	72	0.89	0.79	0.84	0.80	0.91
Bahrain	0.80	57	0.84	0.53	0.72	0.78	0.88
Chile	0.86	65	0.86	0.69	0.81	0.76	0.89
Chinese Taipei	0.90	73	0.89	0.81	0.83	0.83	0.90
England	0.90	72	0.89	0.80	0.83	0.79	0.91
Ghana	0.60	42	0.73	0.54	0.44	0.69	0.77
Hong Kong SAR	0.87	66	0.86	0.74	0.78	0.81	0.88
Iran, Islamic Rep. of	0.83	61	0.83	0.75	0.73	0.74	0.86
Israel	0.89	69	0.87	0.74	0.82	0.82	0.90
Italy	0.91	74	0.89	0.84	0.85	0.81	0.90
Japan	0.89	70	0.89	0.74	0.82	0.83	0.89

**Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Students Like Learning Science Scale, Eighth Grade (Continued)**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BSBS17A	BSBS17B*	BSBS17D*	BSBS17E	BSBS17F
Jordan	0.73	51	0.78	0.49	0.67	0.73	0.85
Korea, Rep. of	0.90	71	0.89	0.78	0.84	0.81	0.90
Malaysia	0.84	61	0.84	0.69	0.72	0.77	0.87
New Zealand	0.88	67	0.88	0.74	0.80	0.77	0.90
Norway	0.90	73	0.89	0.79	0.85	0.83	0.90
Oman	0.70	49	0.78	0.47	0.67	0.72	0.83
Palestinian Nat'l Auth.	0.75	52	0.81	0.53	0.66	0.70	0.84
Qatar	0.80	57	0.84	0.54	0.70	0.79	0.87
Saudi Arabia	0.84	61	0.83	0.70	0.77	0.72	0.87
Singapore	0.89	70	0.87	0.81	0.83	0.78	0.90
Thailand	0.77	53	0.77	0.63	0.73	0.71	0.80
Tunisia	0.71	50	0.80	0.40	0.69	0.73	0.84
Turkey	0.79	56	0.81	0.67	0.77	0.61	0.87
United Arab Emirates	0.83	61	0.84	0.63	0.75	0.77	0.88
United States	0.88	68	0.88	0.75	0.81	0.79	0.90
<b>Ninth Grade Participants</b>							
Botswana	0.75	51	0.77	0.64	0.75	0.64	0.78
Honduras	0.74	52	0.80	0.56	0.67	0.70	0.84
South Africa	0.76	52	0.79	0.62	0.69	0.67	0.82
<b>Benchmarking Participants</b>							
Alberta, Canada	0.89	71	0.88	0.79	0.83	0.80	0.91
Ontario, Canada	0.89	70	0.88	0.79	0.82	0.77	0.90
Quebec, Canada	0.89	70	0.87	0.77	0.84	0.79	0.90
Abu Dhabi, UAE	0.81	59	0.83	0.59	0.73	0.77	0.88
Dubai, UAE	0.85	64	0.85	0.68	0.77	0.78	0.88
Alabama, US	0.87	67	0.87	0.74	0.79	0.78	0.90
California, US	0.87	67	0.88	0.72	0.79	0.79	0.90
Colorado, US	0.89	70	0.88	0.78	0.83	0.78	0.90
Connecticut, US	0.88	68	0.89	0.74	0.79	0.79	0.91
Florida, US	0.88	68	0.87	0.76	0.82	0.76	0.90
Indiana, US	0.89	70	0.89	0.78	0.82	0.80	0.91
Massachusetts, US	0.90	72	0.89	0.78	0.83	0.81	0.92
Minnesota, US	0.90	71	0.90	0.78	0.83	0.78	0.92
North Carolina, US	0.88	67	0.88	0.75	0.80	0.77	0.90

\*Reverse coded

**Exhibit 6: Relationship Between the TIMSS 2011 Students Like Learning Science Scale, Eighth Grade, and TIMSS 2011 Science Achievement**

Country	Pearson's Correlation with Science Achievement		Variance in Science Achievement Accounted for by Difference Between Regions of the Scale ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
Australia	0.34	0.12	0.10
Bahrain	0.28	0.08	0.08
Chile	0.15	0.02	0.02
Chinese Taipei	0.38	0.14	0.13
England	0.28	0.08	0.07
Ghana	0.43	0.19	0.17
Hong Kong SAR	0.27	0.07	0.06
Iran, Islamic Rep. of	0.16	0.02	0.03
Israel	0.21	0.04	0.05
Italy	0.19	0.04	0.03
Japan	0.32	0.10	0.09
Jordan	0.29	0.09	0.08
Korea, Rep. of	0.41	0.17	0.16
Malaysia	0.32	0.10	0.09
New Zealand	0.26	0.07	0.06
Norway	0.27	0.07	0.07
Oman	0.44	0.19	0.18
Palestinian Nat'l Auth.	0.28	0.08	0.08
Qatar	0.37	0.14	0.14
Saudi Arabia	0.26	0.07	0.07
Singapore	0.29	0.08	0.07
Thailand	0.22	0.05	0.04
Tunisia	0.19	0.04	0.03
Turkey	0.24	0.06	0.06
United Arab Emirates	0.28	0.08	0.08
United States	0.27	0.07	0.07
<b>International Median</b>	<b>0.28</b>	<b>0.08</b>	<b>0.07</b>
<b>Ninth Grade Participants</b>			
Botswana	0.44	0.19	0.17
Honduras	0.14	0.02	0.03
South Africa	0.26	0.07	0.08
<b>Benchmarking Participants</b>			
Alberta, Canada	0.23	0.05	0.05
Ontario, Canada	0.25	0.06	0.06
Quebec, Canada	0.28	0.08	0.07
Abu Dhabi, UAE	0.26	0.07	0.08
Dubai, UAE	0.26	0.07	0.06

**Exhibit 6: Relationship Between the TIMSS 2011 Students Like Learning Science Scale, Eighth Grade, and TIMSS 2011 Science Achievement (Continued)**

Country	Pearson's Correlation with Science Achievement		Variance in Science Achievement Accounted for by Difference Between Regions of the Scale ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
Alabama, US	0.16	0.03	0.03
California, US	0.25	0.06	0.06
Colorado, US	0.26	0.07	0.05
Connecticut, US	0.23	0.06	0.05
Florida, US	0.31	0.09	0.09
Indiana, US	0.24	0.06	0.05
Massachusetts, US	0.24	0.06	0.06
Minnesota, US	0.28	0.08	0.07
North Carolina, US	0.29	0.09	0.08