

TIMSS 2011

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

The Students Engaged in Chemistry Lessons (ESC) scale was created based on students' degree of agreement to the five statements described below. This scale was administered in countries where the sciences are taught as separate subjects. 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 Chemistry Lessons Scale, Eighth Grade

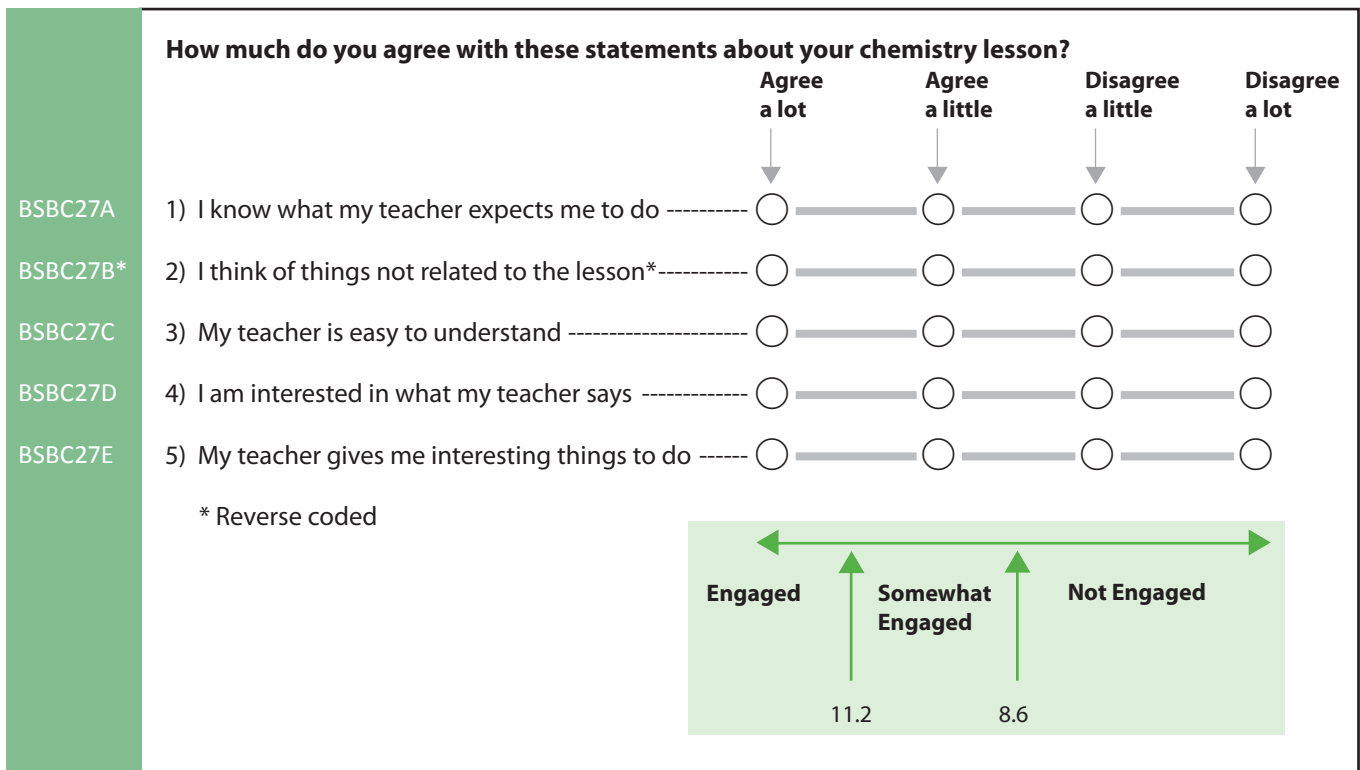


Exhibit 2: Item Parameters for the TIMSS 2011 Students Engaged in Chemistry Lessons Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3
BSBC27A	-1.06724	-0.84680	-0.42016	1.26696
BSBC27B*	-0.43556	-1.09376	0.14834	0.94542
BSBC27C	-0.95359	-0.83868	-0.24539	1.08407
BSBC27D	-1.05188	-0.79555	-0.27085	1.06640
BSBC27E	-0.71855	-0.78669	-0.21159	0.99828

*Reverse coded

Exhibit 3: Scale Transformation Constants

Scale Transformation Constants

A = 10.01915

B = 1.47057

Transformed Scale Score = 10.01915 + 1.47057 • 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	4.07285		8	8.87503	
1	5.65484		9	9.24872	
2	6.42067		10	9.64980	
3	6.96209		11	10.08762	
4	7.40389		12	10.59511	
5	7.79477		13	11.21648	11.2
6	8.16029		14	12.08910	
7	8.51443	8.6	15	13.81271	

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

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BSBC27A	BSBC27B*	BSBC27C	BSBC27D	BSBC27E
Armenia	0.77	56	0.65	0.35	0.83	0.89	0.87
Finland	0.83	61	0.73	0.52	0.85	0.89	0.85
Georgia	-	-	-	-	-	-	-
Hungary	0.83	61	0.74	0.53	0.86	0.87	0.85
Indonesia	0.69	52	0.72	0.01	0.81	0.85	0.84
Kazakhstan	0.74	52	0.68	0.38	0.78	0.83	0.83
Lebanon	0.70	51	0.71	0.16	0.81	0.84	0.81
Lithuania	0.81	59	0.78	0.47	0.83	0.86	0.83
Macedonia, Rep. of	0.74	55	0.74	0.21	0.86	0.86	0.81
Morocco	0.60	43	0.67	0.21	0.74	0.75	0.73

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

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BSBC27A	BSBC27B*	BSBC27C	BSBC27D	BSBC27E
Romania	0.80	58	0.71	0.39	0.87	0.89	0.84
Russian Federation	0.82	60	0.73	0.51	0.85	0.87	0.84
Slovenia	0.83	61	0.78	0.50	0.85	0.87	0.84
Sweden	0.79	57	0.71	0.36	0.84	0.87	0.87
Syrian Arab Republic	0.65	46	0.63	0.25	0.78	0.79	0.78
Ukraine	0.82	60	0.71	0.57	0.82	0.88	0.84

A dash (-) indicates that the item was not administered or comparable data was not available.

*Reverse coded

Exhibit 6: Relationship Between the TIMSS 2011 Students Engaged in Chemistry Lessons 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 (η^2)
	(r)	(r ²)	
Armenia	0.15	0.02	0.03
Finland	0.28	0.08	0.07
Georgia	-	-	-
Hungary	0.03	0.00	0.02
Indonesia	-0.07	0.00	0.00
Kazakhstan	0.22	0.05	0.04
Lebanon	0.18	0.03	0.04
Lithuania	0.11	0.01	0.02
Macedonia, Rep. of	0.12	0.01	0.04
Morocco	0.17	0.03	0.03
Romania	0.16	0.03	0.04
Russian Federation	0.15	0.02	0.03
Slovenia	0.19	0.04	0.04
Sweden	0.17	0.03	0.03
Syrian Arab Republic	0.15	0.02	0.03
Ukraine	0.15	0.02	0.03
International Median	0.15	0.02	0.03

A dash (-) indicates that the item was not administered or comparable data was not available.