TIMSS 2011

The TIMSS 2011 Students Like Learning Chemistry Scale, Eighth Grade

The Students Like Learning Chemistry (SLC) 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 Like Learning Chemistry Scale, Eighth Grade

How much do you agree with these statements about learning chemistry?

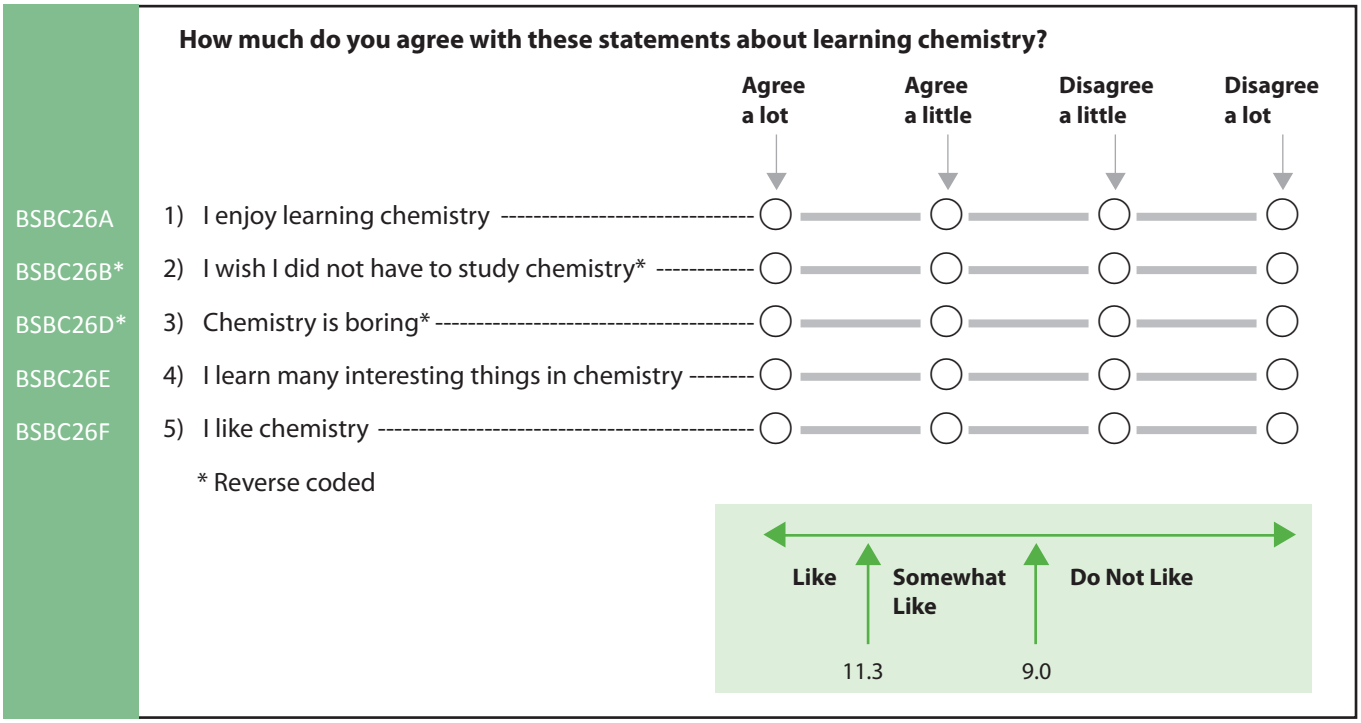

Exhibit 2: Item Parameters for the TIMSS 2011 Students Like Learning Chemistry Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3
BSBC26A	–0.79165	–1.16279	–0.24820	1.41099
BSBC26B*	–0.50644	–0.99844	–0.10015	1.09859
BSBC26D*	–0.58928	–1.03303	–0.16957	1.20260
BSBC26E	–1.12658	–1.01529	–0.41307	1.42836
BSBC26F	–0.63468	–1.04095	–0.25201	1.29296

*Reverse coded

Exhibit 3: Scale Transformation Constants

Scale Transformation Constants	
A = 10.02082 B = 1.19228	Transformed Scale Score = 10.02082 + 1.19228 • Logit Scale Score

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

Raw Score	Transformed Scale Score	Cutpoint
0	5.09413	
1	6.42103	
2	7.07845	
3	7.54903	
4	7.93662	
5	8.28159	
6	8.60307	
7	8.91933	9.0

Raw Score	Transformed Scale Score	Cutpoint
8	9.23750	
9	9.56762	
10	9.92084	
11	10.31007	
12	10.75745	
13	11.30353	11.3
14	12.05334	
15	13.49833	

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

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BSBC26A	BSBC26B*	BSBC26D*	BSBC26E	BSBC26F
Armenia	0.83	61	0.84	0.69	0.67	0.81	0.87
Finland	0.91	75	0.90	0.81	0.86	0.84	0.91
Georgia	–	–	–	–	–	–	–
Hungary	0.89	69	0.88	0.74	0.82	0.81	0.90
Indonesia	0.75	51	0.81	0.46	0.62	0.77	0.84
Kazakhstan	0.80	57	0.82	0.62	0.65	0.80	0.86
Lebanon	0.74	50	0.77	0.55	0.58	0.77	0.83
Lithuania	0.88	69	0.87	0.76	0.80	0.81	0.90
Macedonia, Rep. of	0.76	53	0.85	0.41	0.54	0.83	0.88
Morocco	0.68	46	0.78	0.39	0.58	0.73	0.83
Romania	0.83	60	0.85	0.58	0.72	0.80	0.88

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

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BSBC26A	BSBC26B*	BSBC26D*	BSBC26E	BSBC26F
Russian Federation	0.85	64	0.87	0.63	0.77	0.82	0.89
Slovenia	0.90	72	0.88	0.77	0.84	0.85	0.90
Sweden	0.89	71	0.87	0.75	0.83	0.84	0.90
Syrian Arab Republic	0.67	47	0.80	0.23	0.54	0.79	0.87
Ukraine	0.89	71	0.87	0.78	0.84	0.81	0.90

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 Like Learning Chemistry 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	0.12	0.01	0.02
Finland	0.31	0.10	0.08
Georgia	–	–	–
Hungary	0.07	0.00	0.02
Indonesia	–0.04	0.00	0.00
Kazakhstan	0.25	0.06	0.05
Lebanon	0.24	0.06	0.07
Lithuania	0.18	0.03	0.04
Macedonia, Rep. of	0.10	0.01	0.04
Morocco	0.23	0.05	0.05
Romania	0.16	0.03	0.05
Russian Federation	0.16	0.03	0.03
Slovenia	0.22	0.05	0.05
Sweden	0.24	0.06	0.04
Syrian Arab Republic	0.16	0.03	0.03
Ukraine	0.15	0.02	0.03
International Median	**0.16**	**0.03**	**0.04**

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