TIMSS 2011 The TIMSS 2011 Students Like Learning Biology Scale, Eighth Grade

The Students Like Learning Biology (SLB) 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 Biology Scale, Eighth Grade

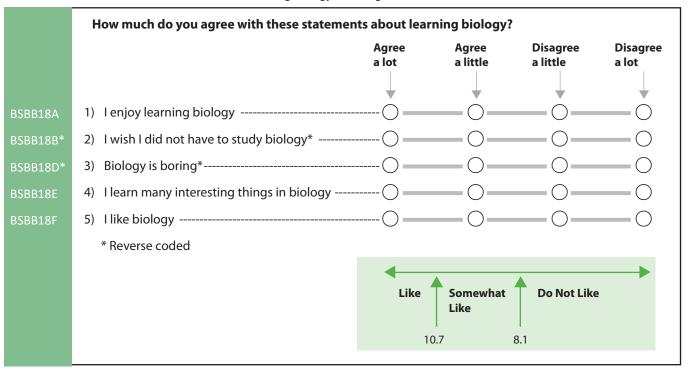


Exhibit 2: Item Parameters for the TIMSS 2011 Students Like Learning Biology Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3
BSBB18A	-1.63604	-1.39320	-0.42272	1.81592
BSBB18B*	-1.06929	-1.04000	-0.22428	1.26428
BSBB18D*	-1.06529	-1.11005	-0.25664	1.36669
BSBB18E	-2.06572	-1.05057	-0.51683	1.56740
BSBB18F	-1.39365	-1.22478	-0.35901	1.58379

^{*}Reverse coded

Exhibit 3: Scale Transformation Constants

Scale Transformation Constants		
A = 10.08904	Transformed Carlo Carro 10.00004 + 110142 Logit Carlo Carro	
B = 1.18143	Transformed Scale Score = 10.08904 + 1.18143 • 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	4.15352		8	8.45031	
1	5.46924		9	8.82147	
2	6.13197		10	9.22026	
3	6.61468		11	9.66026	
4	7.02673		12	10.15946	
5	7.39775		13	10.75363	10.7
6	7.75003		14	11.54285	
7	8.09757	8.1	15	13.01279	

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

Country	Cronbach's Percent of	Factor Loadings for Each Item					
	Alpha Reliability Coefficient	Variance Explained	BSBB18A	BSBB18B*	BSBB18D*	BSBB18E	BSBB18F
Armenia	0.81	58	0.81	0.71	0.71	0.75	0.84
Finland	0.90	72	0.87	0.81	0.84	0.82	0.90
Georgia	0.82	59	0.84	0.71	0.71	0.70	0.86
Hungary	0.88	69	0.87	0.75	0.82	0.79	0.90
Indonesia	0.80	55	0.79	0.63	0.73	0.74	0.82
Kazakhstan	0.78	54	0.79	0.65	0.66	0.75	0.83
Lebanon	0.75	51	0.78	0.60	0.58	0.75	0.84
Lithuania	0.88	68	0.86	0.78	0.81	0.78	0.89
Macedonia, Rep. of	0.66	48	0.84	0.48	0.21	0.81	0.88
Morocco	0.67	46	0.75	0.51	0.65	0.64	0.79
Romania	0.82	60	0.82	0.63	0.75	0.77	0.88



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

Country	Alpha Varian	Percent of	Factor Loadings for Each Item				
		Variance Explained	BSBB18A	BSBB18B*	BSBB18D*	BSBB18E	BSBB18F
Russian Federation	0.84	62	0.83	0.64	0.79	0.77	0.89
Slovenia	0.90	72	0.87	0.78	0.85	0.83	0.90
Sweden	0.89	70	0.86	0.76	0.83	0.82	0.90
Syrian Arab Republic	0.63	44	0.71	0.39	0.65	0.70	0.80
Ukraine	0.86	65	0.83	0.74	0.80	0.76	0.88

^{*}Reverse coded

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

Country		rrelation with hievement	Variance in Science Achievement Accounted for by Difference	
	(r)	(r²)	Between Regions of the Scale (ŋ²)	
Armenia	0.12	0.02	0.02	
Finland	0.20	0.04	0.03	
Georgia	0.19	0.04	0.04	
Hungary	0.07	0.00	0.01	
Indonesia	0.09	0.01	0.01	
Kazakhstan	0.16	0.03	0.03	
Lebanon	0.28	0.08	0.08	
Lithuania	0.10	0.01	0.01	
Macedonia, Rep. of	0.20	0.04	0.08	
Morocco	0.27	0.07	0.06	
Romania	0.15	0.02	0.02	
Russian Federation	0.04	0.00	0.00	
Slovenia	-0.01	0.00	0.00	
Sweden	0.21	0.04	0.03	
Syrian Arab Republic	0.23	0.05	0.05	
Ukraine	0.08	0.01	0.00	
International Median	0.16	0.02	0.02	