

TIMSS 2011

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

The Students Engaged in Physics Lessons (ESP) 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 Physics Lessons Scale, Eighth Grade

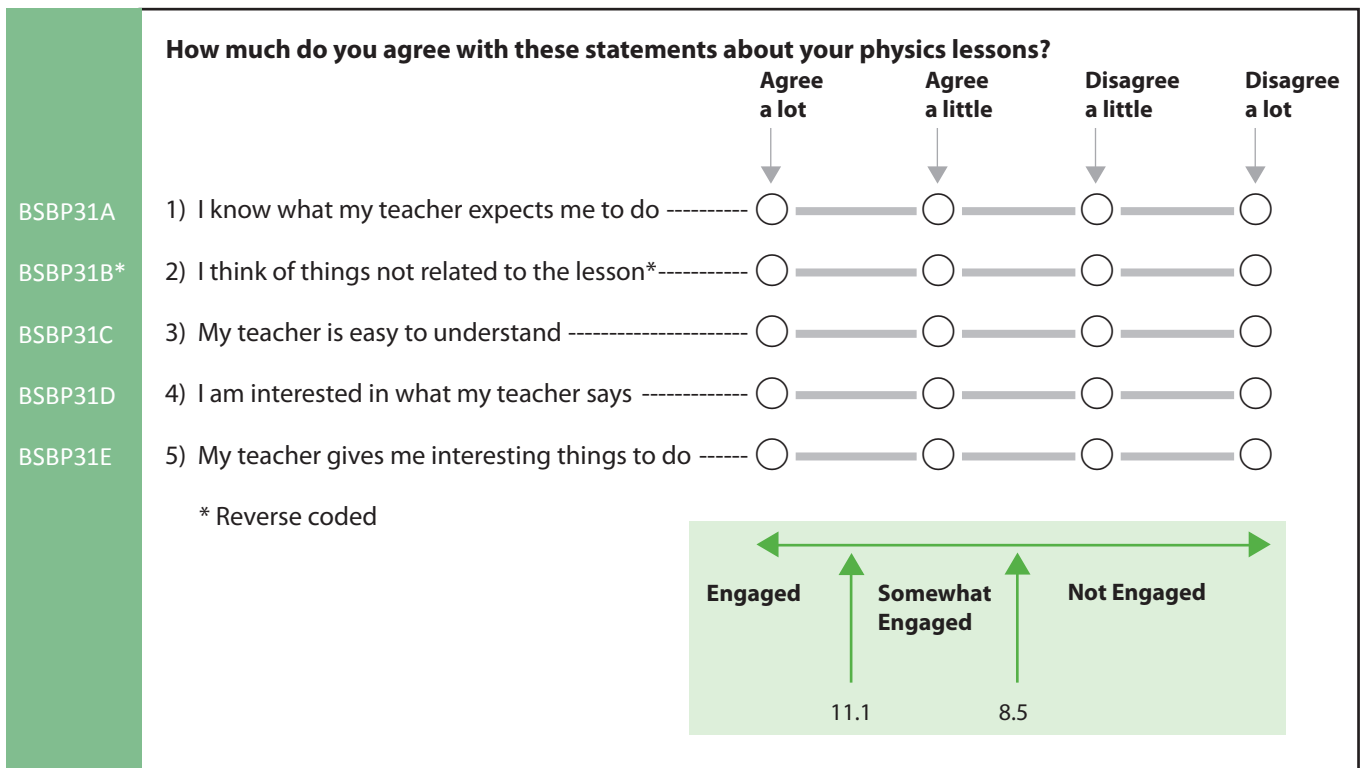


Exhibit 2: Item Parameters for the TIMSS 2011 Students Engaged in Physics Lessons Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3
BSBP31A	-1.07157	-0.82405	-0.39034	1.21439
BSBP31B*	-0.46782	-1.06763	0.16676	0.90087
BSBP31C	-1.01463	-0.81350	-0.24111	1.05461
BSBP31D	-1.08686	-0.79047	-0.24525	1.03572
BSBP31E	-0.75929	-0.77101	-0.18329	0.95430

*Reverse coded

Exhibit 3: Scale Transformation Constants

Scale Transformation Constants

A = 10.02283

B = 1.49621

Transformed Scale Score = 10.02283 + 1.49621 • 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	3.95098		8	8.81260	
1	5.56173		9	9.18590	
2	6.33967		10	9.58381	
3	6.88842		11	10.02235	
4	7.33509		12	10.52787	
5	7.72916		13	11.14923	11.1
6	8.09671		14	12.02454	
7	8.45144	8.5	15	13.76539	

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

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BSBP31A	BSBP31B*	BSBP31C	BSBP31D	BSBP31E
Armenia	0.72	53	0.62	0.26	0.85	0.87	0.85
Finland	0.82	60	0.72	0.49	0.85	0.88	0.85
Georgia	0.71	51	0.70	0.25	0.84	0.78	0.83
Hungary	0.81	59	0.73	0.48	0.85	0.88	0.84
Indonesia	0.67	51	0.69	-0.03	0.82	0.86	0.84
Kazakhstan	0.74	52	0.69	0.36	0.78	0.84	0.83
Lebanon	0.71	53	0.76	0.04	0.82	0.85	0.83
Lithuania	0.81	59	0.79	0.42	0.84	0.85	0.83
Macedonia, Rep. of	0.72	54	0.75	0.15	0.86	0.85	0.80
Morocco	0.59	42	0.65	0.23	0.73	0.76	0.73

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

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BSBP31A	BSBP31B*	BSBP31C	BSBP31D	BSBP31E
Romania	0.79	57	0.73	0.28	0.87	0.89	0.85
Russian Federation	0.81	59	0.73	0.49	0.84	0.87	0.83
Slovenia	0.83	61	0.78	0.46	0.85	0.87	0.85
Sweden	0.78	56	0.72	0.32	0.82	0.87	0.87
Syrian Arab Republic	0.65	47	0.63	0.24	0.80	0.80	0.78
Ukraine	0.80	57	0.69	0.53	0.81	0.88	0.82

*Reverse coded

Exhibit 6: Relationship Between the TIMSS 2011 Students Engaged in Physics 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	0.23	0.05	0.05
Finland	0.26	0.07	0.07
Georgia	0.25	0.06	0.07
Hungary	0.15	0.02	0.02
Indonesia	-0.05	0.00	0.00
Kazakhstan	0.18	0.03	0.04
Lebanon	0.18	0.03	0.04
Lithuania	0.07	0.01	0.01
Macedonia, Rep. of	0.18	0.03	0.05
Morocco	0.17	0.03	0.03
Romania	0.14	0.02	0.03
Russian Federation	0.20	0.04	0.04
Slovenia	0.17	0.03	0.03
Sweden	0.15	0.02	0.02
Syrian Arab Republic	0.15	0.02	0.04
Ukraine	0.18	0.03	0.04
International Median	0.17	0.03	0.04