

TIMSS 2011

The TIMSS 2011 Home Educational Resources Scale, Eighth Grade

The Home Educational Resources (HER) scale was created based on students' responses concerning the availability of three home resources, 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 Home Educational Resources Scale, Eighth Grade

BSBG04	Number of books in the home: 1) 0–10 2) 11–25 3) 26–100 4) 101–200 5) More than 200	BSDGEDUP	Highest level of education of either parent:¹ 1) Finished some primary or lower secondary or did not go to school 2) Finished lower secondary 3) Finished upper secondary 4) Finished post-secondary education 5) Finished university or higher
DSDG05S	Number of home study supports:¹ 1) None 2) Internet connection or own room 3) Both		

¹ Derived variable, for more details see [Supplement 3](#) of the *TIMSS 2011 User Guide for the International Database*

Exhibit 2: Item Parameters for the TIMSS 2011 Home Educational Resources Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3	tau_4
BSBG04	0.24144	-1.27463	-0.23488	0.89834	0.61117
DSDG05S ¹	-0.92656	-0.51213	0.51213		
BSDGEDUP ¹	-0.53091	-0.70252	-0.68008	0.99819	0.38441

¹ Derived variable, for more details see [Supplement 3](#) of the *TIMSS 2011 User Guide for the International Database*

Exhibit 3: Scale Transformation Constants

Scale Transformation Constants	
A = 10.03987	Transformed Scale Score = 10.03987 + 1.86070 • Logit Scale Score
B = 1.86070	

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

Raw Score	Transformed Scale Score	Cutpoint
0	4.32303	
1	6.33067	
2	7.37134	
3	8.19314	8.2
4	8.91919	
5	9.60097	
6	10.25398	
7	10.92551	
8	11.64917	
9	12.51743	12.5
10	14.01827	

Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Home Educational Resources Scale, Eighth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item		
			BSBG04	BSDG05S	BSDGEDUP
Armenia	0.47	50	0.75	0.59	0.76
Australia	0.44	48	0.77	0.48	0.79
Bahrain	0.44	48	0.68	0.59	0.79
Chile	0.58	55	0.72	0.69	0.82
Chinese Taipei	0.47	49	0.80	0.41	0.81
England	0.40	46	0.78	0.40	0.79
Finland	0.35	44	0.77	0.31	0.79
Georgia	0.55	54	0.79	0.65	0.76
Ghana	0.44	48	0.74	0.61	0.73
Hong Kong SAR	0.49	50	0.78	0.47	0.81
Hungary	0.56	54	0.82	0.52	0.83
Indonesia	0.42	48	0.65	0.67	0.75
Iran, Islamic Rep. of	0.66	62	0.76	0.76	0.83
Israel	0.51	67	0.82	–	0.82
Italy	0.44	48	0.80	0.35	0.81
Japan	0.36	45	0.70	0.55	0.74
Jordan	0.49	50	0.65	0.71	0.76
Kazakhstan	0.51	51	0.75	0.70	0.70
Korea, Rep. of	0.46	49	0.77	0.54	0.77
Lebanon	0.45	48	0.67	0.62	0.79
Lithuania	0.51	51	0.77	0.56	0.80
Macedonia, Rep. of	0.50	51	0.73	0.62	0.79
Malaysia	0.56	54	0.70	0.71	0.78

Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Component Analysis of the Items in the TIMSS 2011 Home Educational Resources Scale, Eighth Grade (Continued)

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item		
			BSBG04	BSDG05S	BSDGEDUP
Morocco	0.59	58	0.73	0.78	0.78
New Zealand	0.41	47	0.76	0.54	0.73
Norway	0.38	46	0.78	0.40	0.79
Oman	0.51	52	0.64	0.74	0.78
Palestinian Nat'l Auth.	0.48	50	0.67	0.69	0.76
Qatar	0.36	44	0.65	0.58	0.76
Romania	0.63	59	0.80	0.69	0.81
Russian Federation	0.47	49	0.74	0.56	0.78
Saudi Arabia	0.48	50	0.67	0.65	0.79
Singapore	0.47	49	0.75	0.52	0.79
Slovenia	0.39	46	0.79	0.31	0.81
Sweden	0.38	46	0.78	0.44	0.76
Syrian Arab Republic	0.50	52	0.67	0.71	0.78
Thailand	0.62	59	0.76	0.73	0.81
Tunisia	0.60	56	0.71	0.72	0.82
Turkey	0.63	58	0.75	0.75	0.80
Ukraine	0.45	48	0.69	0.62	0.76
United Arab Emirates	0.42	47	0.72	0.59	0.74
United States	0.49	51	0.73	0.60	0.80
Ninth Grade Participants					
Botswana	0.45	49	0.67	0.66	0.76
Honduras	0.60	56	0.74	0.70	0.80
South Africa	0.51	52	0.69	0.72	0.75
Benchmarking Participants					
Alberta, Canada	0.31	43	0.69	0.49	0.76
Ontario, Canada	0.33	44	0.73	0.46	0.75
Quebec, Canada	0.37	45	0.79	0.28	0.81
Abu Dhabi, UAE	0.40	46	0.72	0.53	0.76
Dubai, UAE	0.46	49	0.73	0.62	0.74
Alabama, US	0.45	49	0.71	0.58	0.79
California, US	0.55	54	0.75	0.62	0.81
Colorado, US	0.53	54	0.74	0.63	0.82
Connecticut, US	0.49	51	0.77	0.51	0.81
Florida, US	0.42	48	0.69	0.58	0.78
Indiana, US	0.39	46	0.73	0.46	0.79
Massachusetts, US	0.47	50	0.79	0.44	0.82
Minnesota, US	0.41	47	0.73	0.54	0.77
North Carolina, US	0.49	52	0.74	0.63	0.78

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

Exhibit 6: Relationship Between the TIMSS 2011 Students Home Educational Resources Scale, Eighth Grade, and TIMSS 2011 Achievement

Country	Pearson's Correlation with Achievement				Variance in Achievement Accounted for by Difference Between Regions of the Scale (η^2)	
	(r)		(r ²)		Mathematics	Science
	Mathematics	Science	Mathematics	Science		
Armenia	0.27	0.24	0.07	0.06	0.06	0.04
Australia	0.44	0.48	0.19	0.23	0.12	0.15
Bahrain	0.33	0.32	0.11	0.10	0.07	0.06
Chile	0.40	0.42	0.16	0.17	0.10	0.11
Chinese Taipei	0.41	0.44	0.17	0.19	0.13	0.14
England	0.44	0.50	0.19	0.25	0.12	0.16
Finland	0.32	0.36	0.10	0.13	0.07	0.08
Georgia	0.37	0.35	0.14	0.12	0.11	0.11
Ghana	0.06	0.09	0.00	0.01	0.00	0.01
Hong Kong SAR	0.29	0.27	0.09	0.07	0.06	0.05
Hungary	0.53	0.51	0.28	0.26	0.22	0.21
Indonesia	0.18	0.14	0.03	0.02	0.02	0.01
Iran, Islamic Rep. of	0.42	0.41	0.18	0.17	0.16	0.14
Israel	0.43	0.42	0.19	0.17	0.08	0.07
Italy	0.35	0.39	0.12	0.15	0.09	0.11
Japan	0.35	0.33	0.12	0.11	0.08	0.07
Jordan	0.30	0.26	0.09	0.07	0.05	0.04
Kazakhstan	0.25	0.32	0.06	0.10	0.03	0.06
Korea, Rep. of	0.44	0.39	0.19	0.16	0.15	0.12
Lebanon	0.34	0.34	0.12	0.11	0.09	0.08
Lithuania	0.43	0.42	0.18	0.18	0.12	0.11
Macedonia, Rep. of	0.43	0.44	0.18	0.19	0.12	0.12
Malaysia	0.40	0.40	0.16	0.16	0.11	0.11
Morocco	0.27	0.20	0.07	0.04	0.07	0.04
New Zealand	0.42	0.48	0.17	0.23	0.11	0.15
Norway	0.40	0.42	0.16	0.18	0.11	0.12
Oman	0.34	0.32	0.11	0.10	0.08	0.07
Palestinian Nat'l Auth.	0.26	0.27	0.07	0.07	0.04	0.05
Qatar	0.36	0.35	0.13	0.13	0.09	0.09
Romania	0.49	0.43	0.24	0.19	0.18	0.14
Russian Federation	0.29	0.31	0.08	0.10	0.06	0.06
Saudi Arabia	0.23	0.26	0.05	0.07	0.04	0.04
Singapore	0.36	0.42	0.13	0.18	0.08	0.11
Slovenia	0.38	0.39	0.14	0.15	0.08	0.08
Sweden	0.37	0.44	0.14	0.19	0.10	0.13
Syrian Arab Republic	0.11	0.11	0.01	0.01	0.01	0.01
Thailand	0.31	0.29	0.10	0.09	0.08	0.07

Exhibit 6: Relationship Between the TIMSS 2011 Students Home Educational Resources Scale, Eighth Grade, and TIMSS 2011 Achievement (Continued)

Country	Pearson's Correlation with Achievement				Variance in Achievement Accounted for by Difference Between Regions of the Scale (η^2)	
	(r)		(r ²)		Mathematics	Science
	Mathematics	Science	Mathematics	Science		
Tunisia	0.31	0.25	0.10	0.06	0.07	0.05
Turkey	0.45	0.42	0.21	0.18	0.16	0.14
Ukraine	0.38	0.39	0.14	0.15	0.10	0.10
United Arab Emirates	0.31	0.33	0.10	0.11	0.06	0.07
United States	0.40	0.44	0.16	0.19	0.12	0.14
International Median	0.36	0.37	0.13	0.14	0.09	0.08
Ninth Grade Participants						
Botswana	0.08	0.10	0.01	0.01	0.01	0.01
Honduras	0.22	0.24	0.05	0.06	0.04	0.05
South Africa	0.32	0.34	0.11	0.11	0.10	0.10
Benchmarking Participants						
Alberta, Canada	0.28	0.37	0.08	0.14	0.05	0.08
Ontario, Canada	0.33	0.38	0.11	0.15	0.06	0.09
Quebec, Canada	0.35	0.39	0.13	0.15	0.06	0.09
Abu Dhabi, UAE	0.29	0.30	0.08	0.09	0.05	0.06
Dubai, UAE	0.37	0.38	0.13	0.15	0.08	0.10
Alabama, US	0.40	0.43	0.16	0.18	0.11	0.12
California, US	0.39	0.44	0.15	0.19	0.11	0.14
Colorado, US	0.46	0.48	0.21	0.23	0.16	0.18
Connecticut, US	0.51	0.54	0.26	0.29	0.20	0.21
Florida, US	0.35	0.40	0.12	0.16	0.09	0.11
Indiana, US	0.40	0.42	0.16	0.17	0.11	0.13
Massachusetts, US	0.42	0.48	0.18	0.23	0.12	0.16
Minnesota, US	0.41	0.45	0.17	0.20	0.12	0.14
North Carolina, US	0.41	0.44	0.17	0.20	0.12	0.14