

TIMSS 2011

The TIMSS 2011 Instruction to Engage Students in Learning Scale, Fourth Grade

The Instruction to Engage Students in Learning (IES) scale was created based on teachers' responses to how often they used each of six instructional practices 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 Instruction to Engage Students in Learning Scale, Fourth Grade

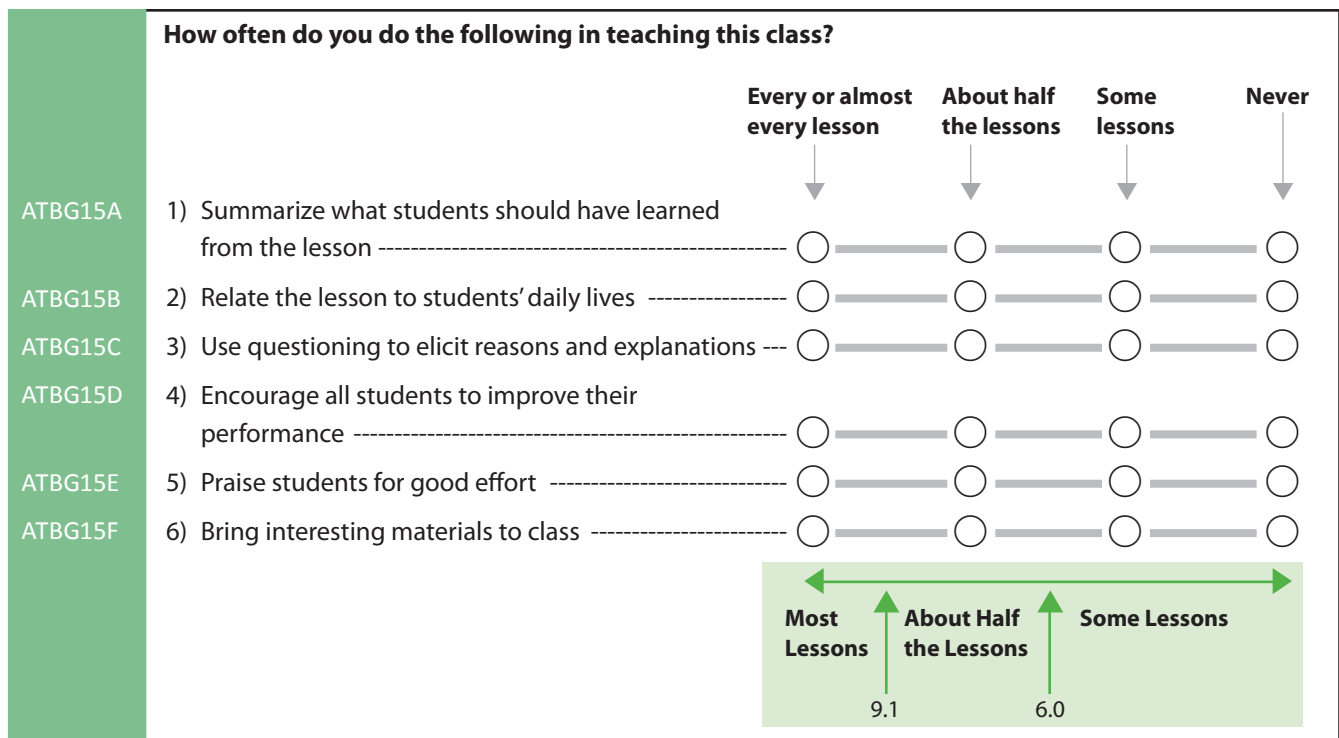


Exhibit 2: Item Parameters for the TIMSS 2011 Instruction to Engage Students in Learning Scale, Fourth Grade¹

Item	delta	tau_1	tau_2
ATBG15A	-1.35442	0.05798	-0.05798
ATBG15B	-1.05640	-0.26822	0.26822
ATBG15C	-1.92928	-0.10243	0.10243
ATBG15D	-2.08216	0.03918	-0.03918
ATBG15E	-2.28457	0.13759	-0.13759
ATBG15F	-0.05356	-0.60032	0.60032

¹ For the purpose of scaling, the categories "Some lessons" and "Never" were combined because there were very few respondents in each of these categories.

Exhibit 3: Scale Transformation Constants

Scale Transformation Constants

$$A = 10.13282$$

$$B = 1.70766$$

$$\text{Transformed Scale Score} = 10.13282 + 1.70766 \cdot \text{Logit Scale Score}$$

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	2.95141		7	7.97126	
1	4.57134		8	8.51259	
2	5.38004		9	9.14128	9.1
3	5.98412	6.0	10	9.93028	
4	6.50901		11	11.04307	
5	6.99263		12	13.17146	
6	7.47172				

Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Instruction to Engage Students in Learning Scale, Fourth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item					
			ATBG15A	ATBG15B	ATBG15C	ATBG15D	ATBG15E	ATBG15F
Armenia	0.52	30	0.58	0.61	0.62	0.45	0.49	0.51
Australia	0.62	36	0.64	0.69	0.70	0.48	0.45	0.57
Austria	0.70	41	0.68	0.72	0.74	0.64	0.48	0.52
Azerbaijan	0.40	26	0.69	0.50	0.57	0.52	0.25	0.44
Bahrain	0.49	29	0.25	0.57	0.68	0.47	0.47	0.67
Belgium (Flemish)	0.62	36	0.50	0.73	0.64	0.73	0.44	0.52
Chile	0.53	33	0.41	0.53	0.62	0.58	0.58	0.67
Chinese Taipei	0.83	54	0.63	0.69	0.75	0.79	0.78	0.75
Croatia	0.54	32	0.40	0.67	0.61	0.57	0.58	0.55
Czech Republic	0.53	30	0.42	0.56	0.62	0.49	0.55	0.65
Denmark	0.65	37	0.53	0.68	0.58	0.62	0.61	0.60
England	0.44	30	0.68	0.25	0.46	0.68	0.66	0.38
Finland	0.66	39	0.45	0.69	0.66	0.66	0.73	0.48
Georgia	0.53	32	0.28	0.49	0.25	0.81	0.75	0.57
Germany	0.64	36	0.52	0.59	0.43	0.64	0.72	0.66
Hong Kong SAR	0.67	39	0.49	0.56	0.66	0.70	0.73	0.57
Hungary	0.62	37	0.61	0.51	0.65	0.64	0.61	0.61
Iran, Islamic Rep. of	0.60	34	0.49	0.65	0.61	0.59	0.52	0.64
Ireland	0.51	30	0.58	0.54	0.56	0.49	0.48	0.63
Italy	0.57	34	0.50	0.55	0.42	0.66	0.74	0.57
Japan	0.69	40	0.38	0.70	0.52	0.78	0.76	0.55

Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Instruction to Engage Students in Learning Scale, Fourth Grade (Continued)

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item					
			ATBG15A	ATBG15B	ATBG15C	ATBG15D	ATBG15E	ATBG15F
Kazakhstan	0.47	29	0.33	0.49	0.61	0.65	0.55	0.53
Korea, Rep. of	0.72	43	0.42	0.50	0.68	0.79	0.71	0.76
Kuwait	0.41	27	0.22	0.48	0.44	0.68	0.65	0.53
Lithuania	0.47	28	0.47	0.59	0.68	0.24	0.45	0.64
Malta	0.48	32	0.34	0.42	0.74	0.67	0.71	0.37
Morocco	0.55	32	0.53	0.62	0.65	0.44	0.51	0.63
Netherlands	0.59	34	0.69	0.51	0.71	0.63	0.56	0.31
New Zealand	0.57	33	0.62	0.65	0.63	0.52	0.42	0.57
Northern Ireland	0.61	38	0.60	0.56	0.62	0.69	0.72	0.49
Norway	0.62	35	0.60	0.54	0.54	0.65	0.57	0.64
Oman	0.52	31	0.48	0.59	0.64	0.41	0.57	0.59
Poland	0.48	30	0.35	0.56	0.55	0.66	0.61	0.52
Portugal	0.60	37	0.60	0.63	0.75	0.56	0.52	0.54
Qatar	0.63	36	0.53	0.60	0.72	0.59	0.60	0.58
Romania	0.50	32	0.44	0.65	0.48	0.67	0.63	0.49
Russian Federation	0.61	36	0.43	0.74	0.66	0.53	0.56	0.62
Saudi Arabia	0.53	31	0.45	0.56	0.62	0.51	0.51	0.66
Serbia	0.54	33	0.39	0.51	0.52	0.54	0.71	0.71
Singapore	0.77	47	0.65	0.69	0.62	0.70	0.71	0.71
Slovak Republic	0.61	36	0.41	0.58	0.73	0.68	0.52	0.64
Slovenia	0.56	33	0.42	0.53	0.71	0.55	0.60	0.59
Spain	0.57	34	0.39	0.55	0.65	0.54	0.67	0.63
Sweden	0.68	39	0.63	0.67	0.69	0.61	0.51	0.62
Thailand	0.75	45	0.51	0.66	0.75	0.76	0.67	0.64
Tunisia	0.46	28	0.61	0.61	0.45	0.40	0.48	0.56
Turkey	0.60	35	0.42	0.51	0.64	0.70	0.62	0.60
United Arab Emirates	0.50	30	0.36	0.64	0.49	0.60	0.56	0.59
United States	0.62	38	0.63	0.66	0.64	0.61	0.57	0.58
Yemen	0.54	31	0.45	0.56	0.63	0.55	0.51	0.61
Sixth Grade Participants								
Botswana	0.51	31	0.60	0.61	0.55	0.49	0.51	0.57
Honduras	0.57	32	0.62	0.64	0.70	0.31	0.41	0.63
Yemen	0.56	32	0.37	0.59	0.45	0.69	0.67	0.55
Benchmarking Participants								
Alberta, Canada	0.40	26	0.60	0.77	0.61	0.29	0.08	0.40
Ontario, Canada	0.48	29	0.50	0.60	0.44	0.50	0.64	0.51
Quebec, Canada	0.57	33	0.53	0.56	0.44	0.59	0.68	0.63

Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Instruction to Engage Students in Learning Scale, Fourth Grade (Continued)

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item					
			ATBG15A	ATBG15B	ATBG15C	ATBG15D	ATBG15E	ATBG15F
Abu Dhabi, UAE	0.55	33	0.48	0.63	0.44	0.61	0.72	0.54
Dubai, UAE	0.48	30	0.40	0.63	0.56	0.65	0.45	0.53
Florida, US	0.51	32	0.37	0.66	0.11	0.68	0.77	0.55
North Carolina, US	0.55	43	0.67	0.34	0.82	0.81	0.81	0.16

Exhibit 6: Relationship Between the TIMSS 2011 Instruction to Engage Students in Learning Scale, Fourth 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	0.01	0.01	0.00	0.00	0.00	0.00
Australia	0.09	0.09	0.01	0.01	0.00	0.00
Austria	-0.01	-0.03	0.00	0.00	0.00	0.00
Azerbaijan	0.02	0.04	0.00	0.00	0.00	0.00
Bahrain	0.06	0.05	0.00	0.00	0.00	0.01
Belgium (Flemish)	0.02	0.02	0.00	0.00	0.00	0.00
Chile	-0.01	-0.04	0.00	0.00	0.00	0.00
Chinese Taipei	-0.02	0.02	0.00	0.00	0.00	0.00
Croatia	0.03	0.02	0.00	0.00	0.00	0.00
Czech Republic	0.04	0.05	0.00	0.00	0.00	0.00
Denmark	-0.02	-0.02	0.00	0.00	0.01	0.00
England	0.00	0.01	0.00	0.00	0.00	0.00
Finland	0.06	0.04	0.00	0.00	0.00	0.00
Georgia	0.05	0.03	0.00	0.00	0.00	0.00
Germany	-0.02	-0.09	0.00	0.01	0.01	0.02
Hong Kong SAR	0.14	0.01	0.02	0.00	0.03	0.01
Hungary	-0.01	-0.03	0.00	0.00	0.00	0.00
Iran, Islamic Rep. of	0.10	0.11	0.01	0.01	0.00	0.01
Ireland	-0.05	-0.04	0.00	0.00	0.01	0.01
Italy	-0.05	-0.04	0.00	0.00	0.00	0.00
Japan	0.00	-0.01	0.00	0.00	0.00	0.00
Kazakhstan	0.06	0.02	0.00	0.00	0.00	0.00
Korea, Rep. of	0.06	0.07	0.00	0.00	0.00	0.00
Kuwait	0.04	0.04	0.00	0.00	0.00	0.00
Lithuania	0.03	0.02	0.00	0.00	0.00	0.00
Malta	-0.03	-0.08	0.00	0.01	0.00	0.00
Morocco	0.09	0.11	0.01	0.01	0.02	0.01

Exhibit 6: Relationship Between the TIMSS 2011 Instruction to Engage Students in Learning Scale, Fourth 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		
Netherlands	-0.02	0.01	0.00	0.00	0.00	0.00
New Zealand	-0.02	-0.02	0.00	0.00	0.00	0.00
Northern Ireland	-0.01	-0.03	0.00	0.00	0.00	0.00
Norway	0.08	0.04	0.01	0.00	0.00	0.00
Oman	0.12	0.07	0.02	0.01	0.01	0.00
Poland	0.01	-0.01	0.00	0.00	0.00	0.00
Portugal	0.02	0.02	0.00	0.00	0.00	0.00
Qatar	-0.01	-0.04	0.00	0.00	0.00	0.02
Romania	0.01	0.00	0.00	0.00	0.00	0.00
Russian Federation	0.06	0.07	0.00	0.00	0.00	0.00
Saudi Arabia	0.08	0.11	0.01	0.01	0.01	0.01
Serbia	0.03	0.03	0.00	0.00	0.00	0.00
Singapore	0.00	-0.02	0.00	0.00	0.00	0.01
Slovak Republic	-0.01	-0.03	0.00	0.00	0.00	0.00
Slovenia	-0.04	-0.05	0.00	0.00	0.00	0.00
Spain	0.02	0.04	0.00	0.00	0.00	0.00
Sweden	0.02	0.04	0.00	0.00	0.00	0.00
Thailand	0.04	0.03	0.00	0.00	0.01	0.00
Tunisia	0.04	0.03	0.00	0.00	0.00	0.00
Turkey	0.13	0.12	0.02	0.01	0.02	0.02
United Arab Emirates	0.09	0.06	0.01	0.00	0.01	0.00
United States	-0.02	-0.02	0.00	0.00	0.00	0.00
Yemen	0.05	0.05	0.00	0.00	0.02	0.00
International Median	0.02	0.02	0.00	0.00	0.00	0.00
Sixth Grade Participants						
Botswana	0.06	0.09	0.00	0.01	0.00	0.00
Honduras	0.11	0.10	0.01	0.01	0.03	0.03
Yemen	0.05	0.05	0.00	0.00	0.01	0.01
Benchmarking Participants						
Alberta, Canada	-0.01	0.02	0.00	0.00	0.00	0.00
Ontario, Canada	0.01	0.01	0.00	0.00	0.00	0.00
Quebec, Canada	0.05	0.07	0.00	0.00	0.00	0.00
Abu Dhabi, UAE	0.02	-0.01	0.00	0.00	0.00	0.00
Dubai, UAE	0.17	0.04	0.03	0.00	0.02	0.00
Florida, US	0.04	0.05	0.00	0.00	0.00	0.00
North Carolina, US	-0.06	-0.03	0.00	0.00	0.00	0.00