TIMSS 2011

The TIMSS 2011 Confidence in Teaching Science Scale, Eighth Grade

The Confidence in Teaching Science (CTS) scale was created based on teachers' responses to the five statements 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 Confidence in Teaching Science Scale, Eighth Grade

In teaching science to this class, how confident do you feel to do the following?

		Very Confident	Somewhat Confident	Not Confident
BTBS18A	1) Answer students' questions about science	○	○	○
BTBS18B	2) Explain science concepts or principles by doing science experiments	○	○	○
BTBS18C	3) Provide challenging tasks for capable students	○	○	○
BTBS18D	4) Adapt my teaching to engage students' interest	○	○	○
BTBS18E	5) Help students appreciate the value of learning science	○	○	○

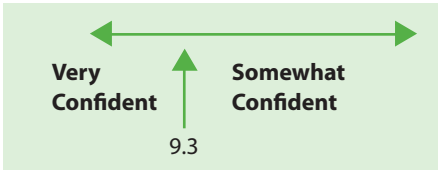

Exhibit 2: Item Parameters for the TIMSS 2011 Confidence in Teaching Science Scale, Eighth Grade[1]

Item	delta
BTBS18A	–2.38734
BTBS18B	–1.55071
BTBS18C	–0.48226
BTBS18D	–1.03196
BTBS18E	–1.40429

1 For the purpose of scaling, the categories "Somewhat Confident" and "Not Confident" were combined because there were very few respondents in each of these categories.

Exhibit 3: Scale Transformation Constants

Scale Transformation Constants	
A = 10.55077 B = 1.23259	Transformed Scale Score = 10.55077 + 1.23259 • Logit Scale Score

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

Raw Score	Transformed Scale Score	Cutpoint
0	5.62769	
1	7.34867	
2	8.40086	
3	9.33670	9.3
4	10.36811	
5	12.06613	

Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Confidence in Teaching Science Scale, Eighth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BTBS18A	BTBS18B	BTBS18C	BTBS18D	BTBS18E
Armenia	0.64	42	0.57	0.63	0.72	0.64	0.65
Australia	0.80	56	0.73	0.73	0.74	0.77	0.75
Bahrain	0.67	43	0.49	0.66	0.65	0.75	0.70
Chile	0.68	45	0.58	0.62	0.74	0.62	0.77
Chinese Taipei	0.73	49	0.75	0.67	0.65	0.74	0.68
England	0.72	48	0.51	0.58	0.75	0.79	0.78
Finland	0.73	48	0.68	0.68	0.75	0.64	0.70
Georgia	0.67	44	0.61	0.63	0.74	0.66	0.66
Ghana	0.51	37	0.66	0.47	0.55	0.69	0.66
Hong Kong SAR	0.81	56	0.72	0.73	0.77	0.75	0.78
Hungary	0.69	45	0.65	0.64	0.69	0.70	0.68
Indonesia	0.64	43	0.70	0.67	0.58	0.67	0.64
Iran, Islamic Rep. of	0.61	39	0.55	0.67	0.59	0.66	0.64
Israel	0.71	47	0.66	0.63	0.67	0.71	0.77
Italy	0.79	54	0.69	0.69	0.79	0.74	0.76
Japan	0.77	53	0.76	0.79	0.75	0.63	0.70
Jordan	0.67	44	0.62	0.64	0.64	0.73	0.67
Kazakhstan	0.52	36	0.58	0.44	0.49	0.72	0.71
Korea, Rep. of	0.78	54	0.75	0.70	0.70	0.72	0.79
Lebanon	0.72	48	0.66	0.69	0.59	0.75	0.77
Lithuania	0.54	36	0.57	0.60	0.68	0.58	0.57
Macedonia, Rep. of	0.58	41	0.67	0.57	0.50	0.74	0.68
Malaysia	0.81	58	0.77	0.78	0.74	0.79	0.72

Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Confidence in Teaching Science Scale, Eighth Grade (Continued)

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			BTBS18A	BTBS18B	BTBS18C	BTBS18D	BTBS18E
Morocco	0.73	48	0.67	0.73	0.61	0.73	0.71
New Zealand	0.70	47	0.70	0.70	0.68	0.69	0.65
Norway	0.70	46	0.50	0.71	0.70	0.72	0.72
Oman	0.50	34	0.46	0.56	0.53	0.63	0.69
Palestinian Nat'l Auth.	0.69	45	0.69	0.76	0.55	0.71	0.62
Qatar	0.73	49	0.74	0.80	0.65	0.65	0.64
Romania	0.60	40	0.32	0.51	0.69	0.75	0.76
Russian Federation	0.48	34	0.56	0.50	0.51	0.67	0.67
Saudi Arabia	0.67	44	0.65	0.68	0.53	0.74	0.69
Singapore	0.82	58	0.68	0.79	0.78	0.78	0.78
Slovenia	0.70	46	0.72	0.64	0.66	0.67	0.69
Sweden	0.75	50	0.69	0.72	0.74	0.70	0.69
Syrian Arab Republic	0.50	35	0.61	0.67	0.18	0.72	0.63
Thailand	0.78	53	0.76	0.76	0.71	0.71	0.71
Tunisia	0.58	38	0.30	0.49	0.66	0.77	0.74
Turkey	0.62	40	0.63	0.70	0.46	0.70	0.66
Ukraine	0.37	30	0.49	0.53	0.61	0.56	0.53
United Arab Emirates	0.64	43	0.68	0.70	0.53	0.69	0.65
United States	0.72	48	0.65	0.72	0.71	0.70	0.68
Ninth Grade Participants							
Botswana	0.59	39	0.59	0.78	0.60	0.68	0.43
Honduras	0.58	39	0.68	0.62	0.54	0.63	0.65
South Africa	0.75	50	0.64	0.67	0.75	0.77	0.70
Benchmarking Participants							
Alberta, Canada	0.75	50	0.66	0.70	0.70	0.70	0.77
Ontario, Canada	0.84	61	0.81	0.80	0.81	0.76	0.71
Quebec, Canada	0.74	50	0.72	0.72	0.69	0.72	0.66
Abu Dhabi, UAE	0.67	44	0.53	0.73	0.59	0.77	0.69
Dubai, UAE	0.66	45	0.79	0.72	0.60	0.65	0.56
Alabama, US	0.79	56	0.70	0.72	0.71	0.74	0.87
California, US	0.74	51	0.75	0.73	0.73	0.66	0.69
Colorado, US	0.75	51	0.66	0.77	0.72	0.75	0.67
Connecticut, US	0.53	35	0.40	0.50	0.85	0.69	0.41
Florida, US	0.65	44	0.69	0.67	0.70	0.77	0.42
Indiana, US	0.44	32	0.28	0.64	0.28	0.78	0.66
Massachusetts, US	0.75	51	0.63	0.72	0.76	0.75	0.70
Minnesota, US	0.58	38	0.21	0.44	0.61	0.76	0.84
North Carolina, US	0.76	51	0.59	0.71	0.84	0.82	0.57

Exhibit 6: Relationship Between the TIMSS 2011 Confidence in Teaching Science 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	0.06	0.00	0.00
Australia	0.09	0.01	0.00
Bahrain	0.19	0.04	0.01
Chile	0.05	0.00	0.01
Chinese Taipei	0.06	0.00	0.00
England	0.01	0.00	0.00
Finland	0.03	0.00	0.00
Georgia	0.02	0.00	0.00
Ghana	0.04	0.00	0.00
Hong Kong SAR	0.13	0.02	0.00
Hungary	0.00	0.00	0.00
Indonesia	0.00	0.00	0.00
Iran, Islamic Rep. of	0.09	0.01	0.01
Israel	0.03	0.00	0.00
Italy	0.03	0.00	0.00
Japan	–0.02	0.00	0.00
Jordan	0.08	0.01	0.00
Kazakhstan	0.06	0.00	0.00
Korea, Rep. of	0.01	0.00	0.00
Lebanon	0.14	0.02	0.02
Lithuania	0.06	0.00	0.00
Macedonia, Rep. of	0.10	0.01	0.01
Malaysia	–0.01	0.00	0.00
Morocco	0.04	0.00	0.00
New Zealand	0.06	0.00	0.01
Norway	–0.06	0.00	0.00
Oman	0.03	0.00	0.00
Palestinian Nat'l Auth.	0.02	0.00	0.00
Qatar	0.14	0.02	0.02
Romania	0.07	0.00	0.00
Russian Federation	0.07	0.00	0.00
Saudi Arabia	0.04	0.00	0.00
Singapore	0.07	0.01	0.00
Slovenia	–0.01	0.00	0.00
Sweden	–0.01	0.00	0.00
Syrian Arab Republic	–0.06	0.00	0.01
Thailand	0.01	0.00	0.00
Tunisia	0.02	0.00	0.00

Exhibit 6: Relationship Between the TIMSS 2011 Confidence in Teaching Science Scale, Eighth Grade, and TIMSS 2011 Science Achievement (Continued)

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)	
Turkey	0.06	0.00	0.00
Ukraine	0.08	0.01	0.00
United Arab Emirates	0.10	0.01	0.00
United States	0.07	0.01	0.00
International Median	**0.04**	**0.00**	**0.00**
Ninth Grade Participants			
Botswana	0.03	0.00	0.00
Honduras	0.03	0.00	0.00
South Africa	0.09	0.01	0.00
Benchmarking Participants			
Alberta, Canada	0.03	0.00	0.00
Ontario, Canada	0.06	0.00	0.00
Quebec, Canada	0.03	0.00	0.00
Abu Dhabi, UAE	0.08	0.01	0.00
Dubai, UAE	0.18	0.03	0.04
Alabama, US	0.01	0.00	0.00
California, US	0.13	0.02	0.02
Colorado, US	0.01	0.00	0.00
Connecticut, US	0.22	0.05	0.00
Florida, US	0.14	0.02	0.03
Indiana, US	–0.12	0.01	0.00
Massachusetts, US	–0.03	0.00	0.00
Minnesota, US	0.06	0.00	0.01
North Carolina, US	–0.12	0.01	0.05