

TIMSS 2011

The TIMSS 2011 Confidence in Teaching Science Scale, Fourth 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 Teachers Feel Confident Teaching Their Science Class Scale, Fourth Grade

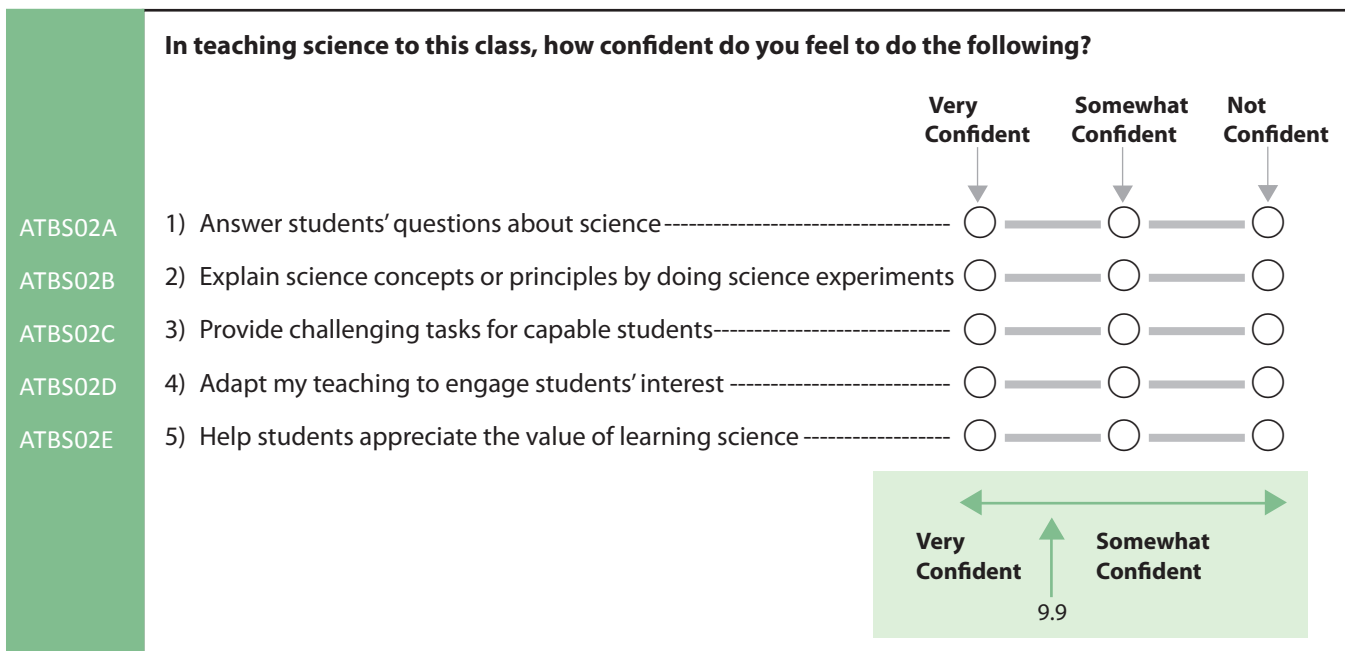


Exhibit 2: Item Parameters for the TIMSS 2011 Confidence in Teaching Science Scale, Fourth Grade¹

Item	delta
ATBS02A	-0.93866
ATBS02B	-0.06074
ATBS02C	0.59684
ATBS02D	-1.02512
ATBS02E	-1.44922

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

$$A = 10.17522$$

$$B = 1.04937$$

$$\text{Transformed Scale Score} = 10.17522 + 1.04937 \cdot \text{Logit Scale Score}$$

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

Raw Score	Transformed Scale Score	Cutpoint
0	6.79213	
1	8.23740	
2	9.13608	
3	9.96537	9.9
4	10.91162	
5	12.42355	

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

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			ATBS02A	ATBS02B	ATBS02C	ATBS02D	ATBS02E
Armenia	0.69	45	0.62	0.68	0.73	0.67	0.63
Australia	0.90	71	0.83	0.84	0.87	0.86	0.83
Austria	0.77	52	0.72	0.70	0.72	0.73	0.75
Azerbaijan	0.58	39	0.63	0.75	0.63	0.51	0.60
Bahrain	0.72	48	0.63	0.69	0.69	0.75	0.69
Belgium (Flemish)	0.72	47	0.61	0.76	0.70	0.70	0.65
Chile	0.80	58	0.74	0.68	0.76	0.81	0.78
Chinese Taipei	0.83	59	0.73	0.75	0.77	0.78	0.81
Croatia	0.76	52	0.60	0.71	0.77	0.82	0.69
Czech Republic	0.76	51	0.70	0.68	0.73	0.73	0.75
Denmark	0.71	47	0.68	0.67	0.69	0.71	0.66
England	0.82	59	0.71	0.79	0.74	0.77	0.81
Finland	0.73	49	0.68	0.74	0.78	0.66	0.62
Georgia	0.65	43	0.72	0.68	0.57	0.67	0.64
Germany	0.76	52	0.74	0.75	0.72	0.69	0.69
Hong Kong SAR	0.88	69	0.82	0.87	0.83	0.76	0.86
Hungary	0.78	54	0.74	0.71	0.74	0.76	0.72
Iran, Islamic Rep. of	0.68	45	0.71	0.69	0.53	0.69	0.71
Ireland	0.82	58	0.72	0.75	0.75	0.81	0.77
Italy	0.80	56	0.73	0.73	0.78	0.78	0.74
Japan	0.85	63	0.84	0.80	0.78	0.75	0.78
Kazakhstan	0.69	45	0.60	0.61	0.67	0.78	0.69
Korea, Rep. of	0.82	58	0.74	0.79	0.76	0.79	0.74
Kuwait	0.64	41	0.65	0.70	0.57	0.66	0.63

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

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item				
			ATBS02A	ATBS02B	ATBS02C	ATBS02D	ATBS02E
Lithuania	0.76	51	0.69	0.70	0.73	0.73	0.73
Malta	0.91	73	0.89	0.87	0.85	0.82	0.82
Morocco	0.75	50	0.70	0.75	0.62	0.74	0.72
Netherlands	0.74	50	0.73	0.66	0.70	0.76	0.68
New Zealand	0.86	65	0.78	0.83	0.82	0.80	0.80
Northern Ireland	0.88	68	0.79	0.83	0.83	0.83	0.84
Norway	0.79	55	0.75	0.79	0.68	0.74	0.73
Oman	0.60	39	0.64	0.62	0.57	0.60	0.69
Poland	0.62	41	0.60	0.65	0.68	0.65	0.60
Portugal	0.79	56	0.73	0.73	0.71	0.79	0.78
Qatar	0.76	52	0.77	0.76	0.60	0.74	0.73
Romania	0.71	50	0.69	0.66	0.72	0.80	0.68
Russian Federation	0.59	39	0.55	0.43	0.78	0.70	0.62
Saudi Arabia	0.68	44	0.61	0.69	0.59	0.77	0.64
Serbia	0.74	51	0.70	0.66	0.68	0.78	0.73
Singapore	0.86	65	0.78	0.79	0.77	0.85	0.83
Slovak Republic	0.72	48	0.63	0.69	0.73	0.74	0.66
Slovenia	0.79	54	0.74	0.77	0.76	0.66	0.74
Spain	0.76	52	0.66	0.65	0.75	0.78	0.75
Sweden	0.83	59	0.77	0.78	0.74	0.79	0.78
Thailand	0.82	59	0.71	0.75	0.75	0.81	0.81
Tunisia	0.74	49	0.68	0.73	0.61	0.71	0.76
Turkey	0.69	46	0.71	0.65	0.46	0.77	0.75
United Arab Emirates	0.75	51	0.70	0.74	0.68	0.75	0.71
United States	0.87	65	0.79	0.83	0.79	0.84	0.79
Yemen	0.68	44	0.67	0.69	0.67	0.68	0.61
Sixth Grade Participants							
Botswana	0.77	53	0.77	0.77	0.71	0.67	0.70
Honduras	0.72	50	0.72	0.65	0.73	0.77	0.64
Yemen	0.58	38	0.68	0.61	0.56	0.61	0.60
Benchmarking Participants							
Alberta, Canada	0.82	59	0.76	0.79	0.75	0.75	0.78
Ontario, Canada	0.82	59	0.79	0.78	0.79	0.75	0.72
Quebec, Canada	0.80	56	0.70	0.74	0.76	0.78	0.75
Abu Dhabi, UAE	0.73	49	0.70	0.67	0.68	0.75	0.71
Dubai, UAE	0.84	62	0.79	0.82	0.76	0.78	0.80
Florida, US	0.87	66	0.85	0.85	0.77	0.79	0.80
North Carolina, US	0.82	58	0.75	0.78	0.71	0.78	0.79

Exhibit 6: Relationship Between the TIMSS 2011 Confidence in Teaching Science Scale, Fourth 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	0.02	0.00	0.00
Australia	0.05	0.00	0.00
Austria	-0.04	0.00	0.00
Azerbaijan	0.08	0.01	0.00
Bahrain	0.06	0.00	0.00
Belgium (Flemish)	0.02	0.00	0.00
Chile	0.03	0.00	0.00
Chinese Taipei	0.06	0.00	0.00
Croatia	-0.03	0.00	0.00
Czech Republic	0.04	0.00	0.00
Denmark	0.02	0.00	0.00
England	0.10	0.01	0.00
Finland	0.04	0.00	0.00
Georgia	0.01	0.00	0.00
Germany	-0.04	0.00	0.00
Hong Kong SAR	-0.15	0.02	0.01
Hungary	-0.08	0.01	0.00
Iran, Islamic Rep. of	0.03	0.00	0.00
Ireland	0.08	0.01	0.01
Italy	0.02	0.00	0.00
Japan	-0.01	0.00	0.00
Kazakhstan	0.06	0.00	0.00
Korea, Rep. of	0.02	0.00	0.00
Kuwait	0.07	0.01	0.00
Lithuania	-0.01	0.00	0.00
Malta	0.04	0.00	0.00
Morocco	0.08	0.01	0.01
Netherlands	0.08	0.01	0.00
New Zealand	0.05	0.00	0.00
Northern Ireland	0.01	0.00	0.00
Norway	-0.02	0.00	0.00
Oman	0.05	0.00	0.00
Poland	0.03	0.00	0.00
Portugal	0.03	0.00	0.00
Qatar	0.05	0.00	0.00
Romania	-0.11	0.01	0.01
Russian Federation	0.02	0.00	0.00
Saudi Arabia	0.17	0.03	0.01

Exhibit 6: Relationship Between the TIMSS 2011 Confidence in Teaching Science Scale, Fourth 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)	
Serbia	0.02	0.00	0.00
Singapore	-0.05	0.00	0.00
Slovak Republic	0.01	0.00	0.00
Slovenia	0.01	0.00	0.00
Spain	0.06	0.00	0.00
Sweden	0.02	0.00	0.00
Thailand	0.08	0.01	0.00
Tunisia	0.02	0.00	0.00
Turkey	0.05	0.00	0.00
United Arab Emirates	0.04	0.00	0.00
United States	0.02	0.00	0.00
Yemen	-0.01	0.00	0.00
International Median	0.03	0.00	0.00
Sixth Grade Participants			
Botswana	0.08	0.01	0.01
Honduras	-0.02	0.00	0.00
Yemen	0.08	0.01	0.00
Benchmarking Participants			
Alberta, Canada	0.08	0.01	0.00
Ontario, Canada	0.02	0.00	0.00
Quebec, Canada	-0.01	0.00	0.00
Abu Dhabi, UAE	0.05	0.00	0.00
Dubai, UAE	-0.06	0.00	0.01
Florida, US	-0.01	0.00	0.00
North Carolina, US	-0.02	0.00	0.00