The International Civic and Citizenship Education Study.

Extent and variation of lower-secondary students' civic knowledge, and changes since 2009

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Introduction

The IEA International Civic and Citizenship Education Study (ICCS) investigated the preparedness and preparation of young people to 'undertake their roles as citizens in a range of countries' (Schulz et al., 2017, p xv). ICCS 2016 is the second cycle of ICCS with the first cycle of ICCS having been completed in 2009.

In ICCS, the preparedness of young people to participate is operationalized through measures of 'students' knowledge and understanding of civics and citizenship as well as students' attitudes, perceptions, and activities related to civics and citizenship (Schulz et al., 2017 p 1). Students' knowledge and understanding of civics and citizenship was measured using a paper-based test and the results are reported on a single scale of 'civic knowledge' in ICCS (Schulz et al., 2016, Schulz et al., 2010).

This paper describes variations in student civic knowledge as measured in ICCS, including the relationship between selected student characteristics and civic knowledge and, comparisons between civic knowledge of students in 2016 and that of students in ICCS 2009.

Theoretical framework

Civic knowledge is a fundamental enabler of effective citizenship participation (Coley and Sum, 2012; Branson and Quigley, 1998). In ICCS, civic knowledge is, conceptualized as the application of cognitive processes to civic and citizenship related content and is specified in the ICCS assessment framework (Schulz et al., 2016). In ICCS civic and citizenship content is organized according to four domains: civic society and systems; civic principles; civic participation; and civic identities. The cognitive processes that can be applied to civic and citizenship content are organized in ICCS into two cognitive domains: knowing; and reasoning and applying (Schulz, et al., 2016).

In ICCS, civic knowledge is measured using a paper-based test. In order to answer each test item (question), students need to apply cognitive processes to civic and citizenship content. While the ICCS framework organizes the civic and citizenship content and cognitive processes into domains, it does not presuppose that these different domains represent a multidimensional structure. The civic knowledge achievement scale, established for ICCS 2009 and used again in ICCS 2016, comprises unidimensional measurement construct (Schulz et al., 2010, Schulz et al., 2017). It is a key outcome variable in ICCS and is used as the dependent variable in this paper.

In ICCS 2009, gender, socioeconomic background and student language background were found to be associated with student civic knowledge and these associations persisted within most countries after controlling of other variables (Schulz et al. 2010, p 228). Differences in student civic knowledge scale scores were also reported between students from non-immigrant and immigrant families (Schulz et al., 2010, p. 194-196). It is, however, important to note that in ICCS the proportion of students from immigrant families varied greatly across countries with some countries having too few students from immigrant family backgrounds to support inferential analyses (see, Schulz et al., 2010 p. 195 and Schulz et al., 2017 p. 69).

Method

Participating students

In ICCS 2016, student-level data were obtained from more than 94,000 students in Grade 8 (or equivalent) in about 3800 schools across 24 countries. In ICCS 2009, data were obtained from more than 140,000 students in their eight year of schooling in about 5,300 schools across 38 countries. Data comparing student knowledge in 2009 and 2016 were available from 21 countries where students participated in both ICCS cycles. However, data have been reported only for the 18 countries that met the IEA technical standards necessary to support reporting in each ICCS cycle.

Test and questionnaire instruments

The ICCS student test was drawn a pool of items that that require students to apply civic and citizenship cognitive processes to content specified in the ICCS assessment framework. In ICCS 2009 the pool comprised 80 items, in ICCS 2016 the pool comprised 88 items. Roughly 10 percent of items were constructed response, requiring students to write anything from one word to a few sentences, the remaining items were multiple-choice. Forty-two items were common to ICCS 2009 and ICCS 2016. These common items enabled the ICCS 2016 items and student results to be reported on the ICCS 2009 scale and to support comparisons of student achievement in ICCS 2016 with that of 2009.

In ICCS 2009 and ICCS 2016 each student completed one test booklet consisting of three clusters. In ICCS 2009 there, there were seven different test booklets and in ICCS 2016 there were eight different test booklets. In each cycle, a cluster appeared in three different booklets—once in each of the first, second, and third positions.[1]

The international student questionnaire took between 30 and 40 minutes to complete and was used to obtain students' perceptions about civics and citizenship as well as information about each student's background. Students completed the questionnaire after completing the test. Relevant to this paper are questions relating to:

- Gender ('Are you a girl or a boy?');
- Parental occupation (What is your mother's or <female guardian's> main job? What does your mother or <female guardian> do in her main job?'/'What is your father's or <male guardian's> main job? What does your father or <male guardian> do in his main job?');
- Parental education ('What is the highest level of education completed by your mother or <female guardian>?/What is the highest level of education completed by your father or <male guardian>?');
- Number of books in the home ('About how many books are there in your home? There are usually about 40 books per metre of shelving. Do not count magazines, newspapers, comic strips, eBooks or your schoolbooks.').

[1] Detailed descriptions of the ICCS test and its design are found in Schulz, Ainley and Fraillon (2011), and Schulz, Carstens, Losito, & Fraillon (forthcoming).

- Immigrant background ('In what country were you and your parents born? – You/Mother <female guardian>/Father <make guardian>'); and
- Home language background ('What language do you speak at home most of the time?');

Analyses

The ICCS civic knowledge reporting scale was established in 2009, using the Rasch model (Rasch, 1960). The scale was centred around a 2009 scale mean (the average score of countries participating in ICCS 2009) of 500 and with a standard deviation of 100 for equally weighted national samples. The 2016 data were equated to the established scale by a joint equating procedure applied to the combined 2009 and 2016 ICCS data (see Schulz et al, forthcoming). In each cycle, plausible value methodology with full conditioning was used to derive summary student achievement statistics and to account for the uncertainty inherent in the measurement process (von Davier, Gonzalez, & Mislevy, 2009).

In 2009, a substantive description of the civic knowledge reporting scale was also established using descriptors of the cognitive process and content assessed by each item. Analysis of the item content and relative difficulty of the items was used as the basis for establishing three levels of achievement. The levels were equally spaced on the ICCS scale and the level descriptions were syntheses of the key characteristic cognitive and content of the items within each level. In ICILS 2016, items were developed to target below the lower boundary of the lowest level of the ICCS 2009 scale. This enabled the description of a new lowest level, Level D. The described scale used in ICCS 2016 consequently comprises four equally spaced described levels from, Level A, an unbounded level at the top of the scale, to Level D. Levels A, B and C in ICILS 2016 are the same as levels 3, 2 and 1 in ICCS 2009. Level D is the new level in 2016.

Bivariate analyses were conducted using a simple comparison of means (t-tests) of civic knowledge scale scores between dichotomised categories for each independent variable. Student gender was collected as a dichotomous variable. However it was necessary to create dichotomous categories for each of the five remaining independent variables in order to enable these analyses. Following is a brief description of how each of these variables was classified and then dichotomised.

Parental occupations were classified according to the ISCO-09 classification (International Labour Organization, 2012) and then transformed into a score on the International International Socio-economic Index (SEI) of occupational status (Ganzeboom, de Graaf, & Treiman, 1992). The highest available SEI score was used as the indicator for each student.

SEI scale is continuous and ranges from 16 to 90. In order to summarize the relationship between parental occupation and student civic knowledge, we divided the SEI scale into two categories based on international cut-off points indicating 'low– medium occupational status' (below 50 SEI scale points) and 'medium–high occupational status' (50 SEI scale points and above). On average across ICCS countries, six percent of students could not be assigned SEI scores because they did not answer the question.

Parental educational attainment was classified using the student responses according to predefined categories denoting educational levels in each country. These categories were constructed with

reference to the International Standard Classification of Education (ISCED) and consisted of 'ISCED 6, 7, or 8,' 'ISCED 4 or 5,' 'ISCED 3,' 'ISCED 2,' and 'Did not complete ISCED 2' (OECD, 1999; UNESCO, 2006). The two categories used in these analyses were 'Below ISED 6' (not having completed a Bachelor's degree or higher) and 'Above ISCED 6' (having completed a Bachelor's degree or higher). The highest level of parental education was used as the indicator of parental educational attainment for each student. On average across the ICCS countries, three percent of students had missing data.

The number of books was broken down into six categories: '0 to 10 books,' '11 to 25 books,' '26 to 100 books,' '101 to 200 books,' and 'more than 200 books.' These six were reduced to two categories: 'below 26 books' and '26 books and above' for the purpose of analysing the association between the number of books in the home and student civic knowledge. On average, one percent of ICCS students had missing data.

Immigrant background was classified using the three questions relating to where the student and each of her or his parents were born. Responses to each were first summarised as 'born in the country of testing' and 'not born in the country of testing'. A single variable was then established from these three responses. This was coded such that a student was classified as being from an 'immigrant family' when the student reported all parents (either both parents or one parent if only one parent was reported) as having being born 'not in country of test'. Note that this is regardless of where the student reported that she or he had been born. On average across the ICCS countries, relevant data pertaining to this question were missing for four percent of the students.

Home language background was classified according to whether the student reported speaking the 'language of test' or 'other' language at home. On average across the ICCS 2016 countries, relevant data were missing for two percent of the students.

Results

Student achievement on the civic knowledge scale

Civic knowledge can be described across four levels of increasing complexity.

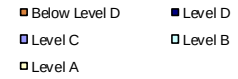
- Students working at Level D demonstrate familiarity with concrete, explicit content and examples relating to the basic features of democracy. The key aspects that differentiate achievement at Level D with that of higher levels is students' breadth of knowledge of the fundamental aspects of democracy and democratic institutions their capacity to engage with abstract concepts that extend beyond concrete, explicit examples of democratic principles and citizenship behaviours.
- Students working at Level C engage with the fundamental principles and broad concepts that underpin civics and citizenship. The key aspects that differentiate achievement at Level C with that of higher levels are the specificity of students' knowledge; the amount of relational rather than mechanistic thinking that students express in regard to the operations of civic and civil institutions.
- Students working at Level B demonstrate some specific knowledge and understanding of the most pervasive civic and citizenship institutions, systems, and concepts. The key aspects that differentiate achievement at Level B with that of higher level A are students use, knowledge and understanding of civic and citizenship content to evaluate and justify policies and practices

- Students working at Level A demonstrate a holistic knowledge and understanding of civic and citizenship concepts and demonstrate some critical perspective.

Table 1 shows the percentage of students in each achievement level by country in ICCS 2016.

Table 1: Percentage of students at each proficiency level of civic knowledge (taken from Schulz et al. 2017, p. 60)

Country	Below Level D		Level D		Level C		Level B		Level A	
Denmark†	0	(0.1)	2	(0.4)	10	(0.8)	25	(0.8)	62	(1.3)
Chinese Taipei	0	(0.2)	3	(0.4)	10	(0.8)	25	(1.2)	62	(1.4)
Finland	0	(0.1)	2	(0.4)	10	(0.8)	27	(1.4)	60	(1.6)
Sweden1	1	(0.2)	4	(0.6)	12	(0.8)	25	(1.0)	58	(1.3)
Norway (9)[1]	1	(0.2)	4	(0.3)	13	(0.7)	29	(1.0)	53	(1.2)
Estonia[1]	0	(0.1)	3	(0.5)	17	(1.0)	37	(1.5)	43	(1.8)
Russian Federation	0	(0.1)	4	(0.6)	17	(1.2)	37	(1.5)	42	(2.1)
Belgium (Flemish)	0	(0.1)	5	(0.8)	19	(1.6)	37	(1.6)	40	(2.2)
Slovenia	0	(0.2)	4	(0.5)	21	(0.9)	38	(1.2)	37	(1.4)
Croatia	0	(0.1)	4	(0.5)	20	(1.2)	40	(1.5)	36	(1.5)
Netherlands†	1	(0.4)	8	(1.4)	23	(1.5)	32	(1.8)	36	(1.8)
Italy	1	(0.3)	7	(0.6)	22	(0.8)	36	(1.1)	35	(1.2)
Lithuania	1	(0.3)	7	(0.8)	24	(1.2)	39	(1.6)	31	(1.7)
Bulgaria	6	(1.2)	16	(1.3)	23	(1.4)	28	(1.5)	27	(1.5)
Malta	6	(0.5)	13	(0.8)	23	(1.0)	32	(1.1)	26	(1.1)
Chile	4	(0.5)	16	(0.9)	27	(1.0)	32	(1.0)	21	(1.1)
Latvia[1]	2	(0.4)	11	(1.1)	29	(1.3)	39	(1.8)	19	(1.6)
Colombia	2	(0.4)	14	(1.1)	31	(1.0)	35	(1.2)	17	(1.2)
Mexico	3	(0.4)	18	(1.0)	33	(1.2)	33	(1.0)	13	(0.8)
Peru	9	(0.9)	24	(1.2)	32	(1.2)	26	(1.2)	9	(0.8)
Dominican Republic	19	(1.2)	39	(1.2)	30	(1.2)	11	(1.0)	1	(0.4)
ICCS 2016 Average	**3**	**(0.1)**	**10**	**(0.2)**	**21**	**(0.2)**	**31**	**(0.3)**	**35**	**(0.3)**
Countries not meeting sample participation requirements										
Hong Kong SAR	3	(0.9)	11	(1.5)	19	(1.7)	32	(1.6)	35	(2.3)
Korea, Republic of[2]	1	(0.3)	5	(0.8)	17	(1.0)	31	(1.2)	47	(1.6)
Benchmarking participant not meeting sample participation requirements										
North Rhine-Westphalia (Germany)[1]	1	(0.1)	7	(0.7)	23	(1.7)	39	(1.5)	31	(1.6)



() Standard errors appear in parentheses.

(9) Country deviated from international defined population and surveyed adjacent upper grade.

† Met guidelines for sampling paticipation rates only after replacement schools were included.

[1] National Defined Population covers 90% to 95% of National Target Population

[2] Country surveyed target grade in the first half of the school year.

On average across all participating countries, two thirds of students achieved scores in Levels A and B of the ICCS civic knowledge proficiency scale. A further 21 percent of students were in Level C.

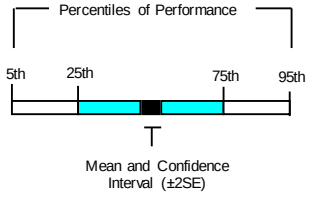
In nine countries, the highest percentages of students were reported as being in Level A, while in a further nine countries highest percentage Level B. In 13 countries, more than 60 percent of students had scores at Levels A and B. In two countries, the relatively highest percentages of student performance were found at Level C. Only one country had the relatively highest percentage of students attaining test scores corresponding to Level D. In two other countries—Peru and the Dominican Republic—more than 60 percent of students were at Level C or below.

Table 2 shows the distributions of student civic knowledge within and across countries. As evident in Table 1, the large achievement differences across ICCS countries in 2016 is clear. The mean achievement of students in four countries, Denmark, Chinese Taipei, Sweden, and Finland was more

than 50 scale points (roughly half an international standard deviation) above the ICCS 2016 mean of 517 scale points. The mean achievement of students in three countries, Mexico, Peru and the Dominican Republic was 50 scale points below the ICCS 2016 mean. However, Table 2 also clearly shows the large variations in student achievement that exist within countries. Across countries, the median variation between the bottom five percent and the top 95 percent of civic knowledge scores was 275 scale points, equivalent to a span of more than three levels on the ICCS civic knowledge scale.

Table 2: Distributions of civic knowledge (adapted from Schulz et al. 2017, p. 58)

Country	Years of schooling	Average Age	Civic Knowledge (250 350 450 550 650 750)	Average scale score	
Denmark†	8	14.9		586	(3.0) ▲
Chinese Taipei	8	14.1		581	(3.0) ▲
Sweden[1]	8	14.7		579	(2.8) ▲
Finland	8	14.8		577	(2.3) ▲
Norway (9)[1]	9	14.6		564	(2.2) ▲
Estonia[1]	8	14.9		546	(3.1) ▲
Russian Federation	8	14.8		545	(4.2) ▲
Belgium (Flemish)	8	13.9		537	(4.1) ▲
Slovenia	8	13.8		532	(2.5) ▲
Croatia	8	14.6		531	(2.5) ▲
Italy	8	13.8		524	(2.4) ▲
Netherlands†	8	14.0		523	(4.5)
Lithuania	8	14.7		518	(3.0)
Latvia[1]	8	14.8		492	(3.1) ▼
Malta	9	13.8		491	(2.7) ▼
Bulgaria	8	14.7		485	(5.3) ▼
Chile	8	14.2		482	(3.1) ▼
Colombia	8	14.6		482	(3.4) ▼
Mexico	8	14.1		467	(2.5) ▼
Peru	8	14.0		438	(3.5) ▼
Dominican Republic	8	14.2		381	(3.0) ▼
ICCS 2016 Average		**14.4**	Below D D C B A	**517**	**(0.7)**
			Proficiency Level		
Countries not meeting sample participation requirements					
Hong Kong SAR	8	13.9		515	(6.6) ▲
Korea, Republic of[2]	8	14.0		551	(3.6) ▲
Benchmarking participant not meeting sample participation requirements					
(Germany)[1]	8	14.3		519	(2.7) ▲



▲ Achievement significantly higher than international average

▼ Achievement significantly lower than international average

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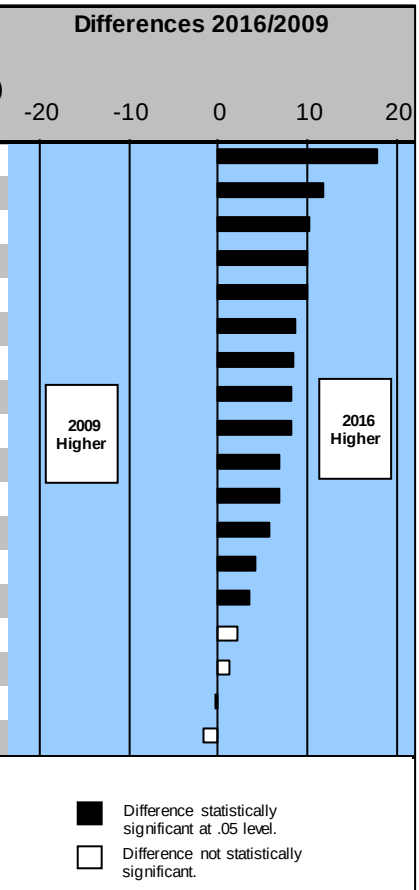
[2] Country surveyed target grade in the first half of the school year.

Changes in civic knowledge since 2009

Tables 3 and 4 compare student civic knowledge in ICCS 2009 and ICCS 2016 across the 18 countries that participated in and met the technical requirements for both assessment cycles. Table 3 shows the proportion of students achieving in the top two levels of the scale (Levels A and B in ICCS 2016 – equivalent to Levels 3 and 2 in ICCS 2009) in each ICCS cycle. Table 4 shows the mean achievement of students in each cycle.

Table 3: Changes in percentages of students at or above proficiency Level B between 2009 and 2016 (taken from Schulz et al. 2017, p. 63)

Country	Level B and above				Difference (2016-2009)		Differences 2016/2009
	2009		2016				-20 -10 0 10 20
Russian Federation	62	(1.6)	79	(1.5)	**18**	(2.4)	
Sweden[1]	72	(1.2)	83	(1.0)	**12**	(1.7)	
Norway (9)[1]	72	(1.6)	82	(0.8)	**10**	(1.9)	
Colombia	43	(1.5)	53	(1.8)	**10**	(2.7)	
Estonia[1]	70	(1.8)	80	(1.2)	**10**	(2.4)	
Mexico	37	(1.4)	46	(1.4)	**9**	(2.4)	
Belgium (Flemish)	68	(2.5)	76	(1.8)	**8**	(3.3)	
Slovenia	66	(1.4)	75	(1.1)	**8**	(2.1)	
Bulgaria	47	(2.3)	55	(2.1)	**8**	(3.2)	
Latvia[1]	52	(2.1)	58	(1.7)	**7**	(3.0)	
Chinese Taipei	80	(1.0)	87	(1.0)	**7**	(1.5)	
Lithuania	63	(1.5)	69	(1.5)	**6**	(2.5)	
Dominican Republic	8	(0.7)	12	(1.0)	**4**	(1.4)	
Denmark†	84	(1.0)	87	(1.0)	**3**	(1.5)	
Chile	51	(1.9)	53	(1.5)	2	(2.7)	
Malta	57	(2.0)	58	(1.3)	1	(2.6)	
Finland	88	(0.8)	87	(0.8)	0	(1.3)	
Italy	73	(1.4)	71	(1.2)	-2	(2.2)	



() Standard errors appear in parentheses.

(9) Country deviated from international defined population and surveyed adjacent upper grade.

† Met guidelines for sampling paticipation rates only after replacement schools were included.

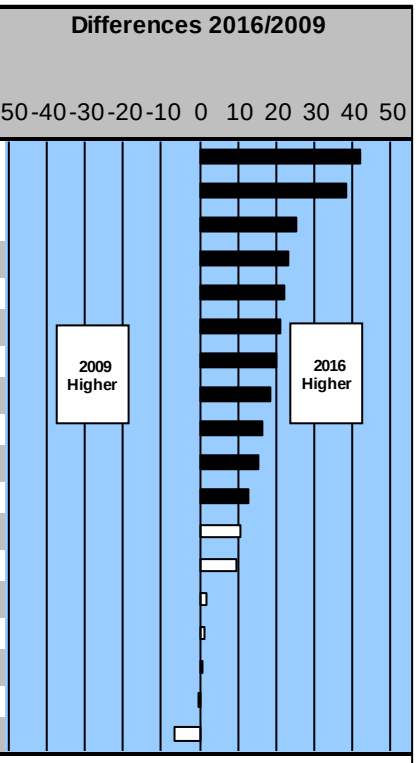
[1] National Defined Population covers 90% to 95% of National Target Population

[2] Country surveyed target grade in the first half of the school year.

Statistically signficiant changes ($p < 0.05$) between 2009 and 2016 are displayed in bold.

Table 4: Changes in average civic knowledge between 2009 and 2016 (taken from Schulz et al. 2017, p. 62)

Country	Mean Scale Score ICCS 2016	Mean Scale Score ICCS 2009	Differences between 2016 and 2009
Sweden[1]	579 (2.8)	537 (3.1)	**42** (5.2)
Russian Federation	545 (4.3)	506 (3.8)	**38** (6.5)
Norway (9)[1]	564 (2.2)	538 (4.0)	**25** (5.5)
Belgium (Flemish)	537 (4.1)	514 (4.7)	**23** (6.9)
Chinese Taipei	581 (3.0)	559 (2.4)	**22** (5.0)
Estonia[1]	546 (3.1)	525 (4.5)	**21** (6.3)
Colombia	482 (3.4)	462 (2.9)	**20** (5.5)
Bulgaria	485 (5.3)	466 (5.0)	**19** (8.0)
Slovenia	532 (2.5)	516 (2.7)	**16** (4.8)
Mexico	467 (2.5)	452 (2.8)	**15** (4.9)
Lithuania	518 (3.0)	505 (2.8)	**13** (5.2)
Latvia[1]	492 (3.1)	482 (4.0)	11 (5.9)
Denmark†	586 (3.0)	576 (3.6)	10 (5.6)
Malta	491 (2.7)	490 (4.5)	2 (6.1)
Dominican Republic	381 (3.0)	380 (2.4)	1 (5.0)
Finland	577 (2.3)	576 (2.4)	0 (4.5)
Chile	482 (3.1)	483 (3.5)	-1 (5.6)
Italy	524 (2.4)	531 (3.3)	-6 (5.1)



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[1] National Defined Population covers 90% to 95% of National Target Population

Statistically signficiant changes ($p < 0.05$) between 2009 and 2016 are displayed in bold.

Difference statistically significant at .05 level.

Difference not statistically significant.

Most countries recorded an increase in civic knowledge between 2009 and 2016. The national mean civic knowledge scale scores were significantly higher in 2016 than in 2009 in 11 of the 18 countries. The score point-differences varied from 13 scale points in Lithuania to 42 scale points in Sweden. The differences in average achievement in the remaining seven countries were not statistically significant. Increase in performance across cycles was reflected in the percentage of students achieving at ICCS Levels B and A. Across all 18 countries, the percentage of students achieving at Levels B and A increased significantly in 14 of 18 countries. The increases varied from three percent in Denmark to 18 percent in the Russian Federation.

Variations in student civic knowledge with respect to gender, socioeconomic and background characteristics

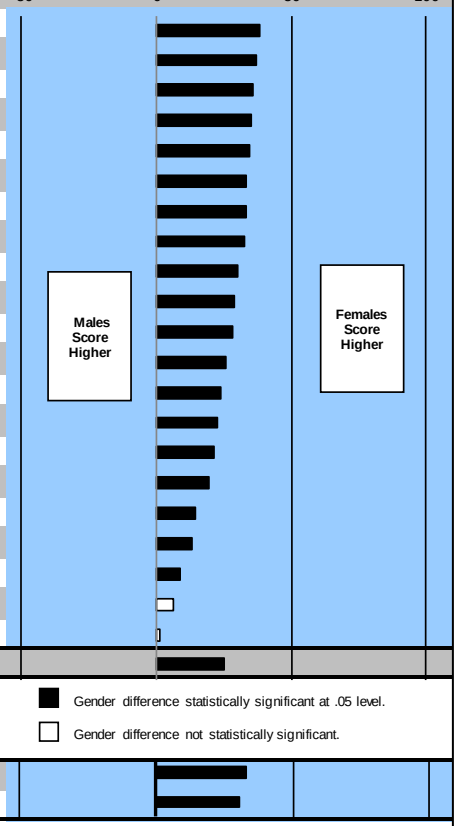
Gender

In ICCS 2009 'the average ICCS civic knowledge scores of female students were higher than those of male students both overall and in nearly all countries' (Schulz, et al., 2010, p. 80). This pattern of difference was repeated in ICCS 2016. In 2016, the mean civic knowledge scale scores of female students was significantly higher than those of male students in 19 of 21 countries. In two countries the difference in mean civic knowledge scale scores was not significantly different. The largest

difference was in Malta where female students outperformed male students by an average of 38 scale points. Across all countries the average difference in achievement between female and male students was 25 scale points.

Table 5: Gender differences in civic knowledge (taken from Schulz et al. 2017, p. 64)

Country	Mean Scale Score Females	Mean Scale Score Males	Difference Absolute Value	Gender Difference
Malta	511 (3.7)	473 (3.9)	**38** (5.4)	
Bulgaria	505 (5.9)	468 (6.0)	**37** (5.6)	
Sweden[1]	598 (3.1)	562 (3.9)	**36** (4.3)	
Slovenia	550 (2.6)	515 (3.3)	**35** (3.4)	
Chinese Taipei	599 (3.4)	564 (3.3)	**34** (3.4)	
Norway (9)[1]	581 (2.4)	547 (2.6)	**34** (2.4)	
Estonia[1]	563 (3.4)	530 (3.4)	**33** (3.6)	
Finland	594 (2.3)	561 (3.4)	**33** (3.8)	
Latvia[1]	507 (3.8)	476 (3.7)	**30** (4.2)	
Dominican Republic	396 (3.4)	367 (3.3)	**29** (3.0)	
Lithuania	532 (3.6)	504 (3.4)	**28** (3.7)	
Croatia	544 (2.9)	518 (2.9)	**26** (3.2)	
Chile	494 (3.8)	471 (3.3)	**24** (3.8)	
Denmark†	597 (2.9)	575 (3.7)	**23** (3.1)	
Mexico	478 (3.0)	456 (3.2)	**21** (3.4)	
Italy	535 (3.0)	515 (3.0)	**20** (3.6)	
Russian Federation	552 (5.1)	538 (4.3)	**14** (4.6)	
Netherlands†	530 (5.0)	516 (4.9)	**13** (4.0)	
Colombia	486 (4.1)	478 (3.6)	**9** (3.9)	
Peru	441 (4.6)	435 (4.1)	6 (4.9)	
Belgium (Flemish)	538 (5.4)	537 (4.6)	1 (5.8)	
ICCS 2016 Average	**530 (0.8)**	**505 (0.8)**	**25 (0.9)**	
Countries not meeting sample participation requirements				
Hong Kong SAR	532 (6.6)	499 (7.7)	**33** (6.9)	
Korea, Republic of[2]	568 (4.8)	537 (3.4)	**31** (4.6)	



() Standard errors appear in parentheses.

Statistically signficiant differences ($p < 0.05$) are displayed in **bold**.

(9) Country deviated from international defined population and surveyed adjacent upper grade.

† Met guidelines for sampling paticipation rates only after replacement schools were included.

[1] National Defined Population covers 90% to 95% of National Target Population

[2] Country surveyed target grade in the first half of the school year.

Statistically signficiant changes ($p < 0.05$) between 2009 and 2016 are displayed in bold.

Students' socioeconomic background

Student socioeconomic background was measured using the three variables: highest parental education; highest parental occupation; and number of books in the home.

For each variable in every country students in the higher socioeconomic background group showed had significantly higher mean civic knowledge scale scores than students in the lower socioeconomic background group.

On average across all countries, the difference between the average civic knowledge scale scores of students in the high parental occupation group (SEI 50 and above) and low parental occupation group

(SEI below 50) was 35 scale points. The minimum difference was 11 scale points in the Dominican Republic and the maximum was 47 scale points in Bulgaria.

For parental education The difference between the average civic knowledge scale scores of students in the high (ISCED Level 6 and above: tertiary) and low (Below ISCED Level 6: post-secondary, non-tertiary and below) parental education groups across all countries was 42 scale points, with a minimum of 18 scale points in Colombia and a maximum of 76 scale points in Bulgaria.

Across all countries, the difference between the average civic knowledge scale scores of students who reported having 26 or more books at home and those students who reported fewer than 26 books in the home was 52 scale points, with a minimum of 22 scale points in the Dominican Republic and a maximum of 99 scale points in Bulgaria.

Student immigrant and language background

Across all countries, the difference between the average civic knowledge scale scores of students from non-immigrant and immigrant families was 43 scale points, with a minimum of six scale points (not statistically significantly different from zero) in Croatia and a maximum of 90 scale points in Colombia. The percentages of students from immigrant families varied from zero in Bulgaria to 18 percent in Sweden (Table 6).

Table 6: Percentages by category of immigrant background and language spoken at home and comparison of average civic knowledge between categories (taken from Schulz et al. 2017, p. 69)

	Civic knowledge scores by immigrant background					Civic knowledge scores by language				
	Immigrant family			Non-immigrant family		Other			Test	
Country	%	Mean	-100 -80 -60 -40 -20 0 20 40 60 80 100	Mean	%	%	Mean	-100 -80 -60 -40 -20 0 20 40 60 80 100 120	Mean	%
Belgium (Flemish)	16 (1.6)	489 (7.3)		**548** (3.8)	84 (1.6)	16 (1.1)	491 (6.6)		**550** (3.9)	84 (1.3)
Bulgaria	0 (0.1)	^		488 (5.1)	100 (0.1)	11 (1.5)	390 (10.1)		**498** (4.4)	89 (1.6)
Chile	2 (0.3)	463 (13.4)		489 (3.0)	98 (0.3)	1 (0.2)	445 (14.8)		**484** (3.1)	99 (0.3)
Chinese Taipei	1 (0.2)	^		583 (2.9)	99 (0.2)	10 (0.7)	538 (5.8)		**588** (2.8)	90 (0.7)
Colombia	1 (0.1)	395 (20.3)		**485** (3.3)	99 (0.1)	1 (0.2)	468 (15.3)		482 (3.4)	99 (0.2)
Croatia	9 (0.9)	526 (6.7)		533 (2.4)	91 (0.9)	1 (0.2)	512 (15.3)		532 (2.5)	99 (0.3)
Denmark†	9 (0.8)	533 (7.6)		**594** (2.8)	91 (0.8)	5 (0.5)	528 (9.9)		**592** (2.8)	95 (0.9)
Dominican Republic	3 (0.4)	365 (8.8)		**388** (3.0)	97 (0.4)	2 (0.3)	381 (11.0)		382 (3.0)	98 (0.4)
Estonia[1]	9 (0.7)	516 (6.2)		**550** (3.2)	91 (0.7)	5 (0.6)	507 (8.9)		**549** (3.0)	95 (0.6)
Finland	3 (0.5)	500 (11.2)		**580** (2.3)	97 (0.5)	5 (0.5)	523 (10.6)		**580** (2.4)	95 (0.6)
Italy	11 (0.9)	489 (6.9)		**533** (2.2)	89 (0.9)	18 (1.0)	479 (5.4)		**536** (2.0)	81 (1.1)
Latvia[1]	4 (0.4)	478 (7.8)		**495** (3.0)	96 (0.4)	10 (1.5)	458 (10.2)		**498** (3.1)	90 (1.6)
Lithuania	2 (0.3)	507 (8.5)		521 (2.9)	98 (0.3)	5 (1.0)	469 (14.3)		**522** (2.9)	95 (1.2)
Malta	8 (0.4)	486 (6.3)		498 (2.9)	92 (0.4)	29 (0.7)	**506** (3.9)		488 (3.3)	71 (0.7)
Mexico	3 (0.4)	420 (13.8)		**472** (2.5)	97 (0.4)	3 (0.7)	414 (13.1)		**469** (2.5)	97 (0.7)
Netherlands†	9 (1.4)	490 (12.0)		**527** (4.3)	91 (1.4)	8 (1.2)	493 (12.4)		**526** (4.4)	92 (1.2)
Norway (9)[1]	11 (1.1)	514 (4.2)		**574** (2.3)	89 (1.1)	8 (0.7)	519 (5.7)		**570** (2.2)	91 (0.9)
Peru	2 (0.3)	362 (11.8)		**445** (3.4)	98 (0.3)	7 (1.1)	345 (7.7)		**445** (3.3)	93 (1.2)
Russian Federation	6 (0.5)	535 (7.2)		546 (4.2)	94 (0.5)	5 (0.9)	485 (9.9)		**548** (4.2)	95 (0.9)
Slovenia	15 (1.0)	498 (5.7)		**539** (2.5)	85 (1.0)	6 (0.7)	484 (6.4)		**537** (2.5)	94 (0.7)
Sweden[1]	18 (1.6)	531 (6.4)		**597** (3.0)	82 (1.6)	14 (1.2)	522 (8.3)		**592** (3.1)	86 (1.4)
ICCS 2016 Average	7 (0.2)	479 (2.2)		**523** (0.7)	93 (0.2)	8 (0.2)	474 (2.3)		**522** (0.7)	92 (0.2)
Countries not meeting sample participation requirements										
Hong Kong SAR	32 (1.3)	523 (7.5)		514 (7.0)	68 (1.3)	11 (1.9)	501 (15.0)		521 (6.4)	89 (1.9)
Korea, Republic of[2]	0 (0.1)	^		553 (3.6)	100 (0.1)	0 (0.1)	^		552 (3.6)	100 (0.1)

Difference between comparison groups statistically significant at p <.05.

Difference between comparison groups not statistically significant at p <.05.

^ Number of students too small to report group average scores.

Score averages which are significantly larger (p < 0.05) than those in the comparison group are displayed in bold.

() Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

(9) Country deviated from international defined population and surveyed adjacent upper grade.

† Met guidelines for sampling participation rates only after replacement schools were included.

[1] National Defined Population covers 90% to 95% of National Target Population

[2] Country surveyed target grade in the first half of the school year.

The civic knowledge scale scores of students who reported speaking the language of testing at home were significantly higher than of those who reported speaking an 'other' language at home in 17 of 21 countries. On average, across all countries, the difference between the groups was 48 scale points. The largest difference was 108 scale points in Bulgaria. In Malta, the mean civic knowledge scale scores of students who spoke a language 'other' than the language of testing at home was significantly higher than of those who spoke the language of testing at home (a difference of 18 scale points).

Conclusions

ICCS 2016 succeeded in extending and building on the work begun in ICCS 2009 by measuring student civic knowledge in such a way as to support comparisons across the cycles and by extending the ICCS achievement through the inclusion of the new Level D. While there remains considerable variation in civic knowledge across countries, the ICCS data also highlight the large variations that exist within countries. The finding that in 2016 the median range between the 5^{th} and 95^{th} percentiles of student achievement within countries was roughly two and a half levels on the proficiency scale gives pause for thought about what can be done to redress the imbalances in achievement that exist within countries.

This paper reported on the preliminary investigations of the relationship between student-level characteristics that were found in ICCS 2009 to be associated with student civic knowledge and civic knowledge in ICCS 2016. Overall the findings were very similar, with gender, socioeconomic status, speaking the language of testing at home and being from a non-immigrant background found to be largely positively associated with student civic knowledge across countries. Further opportunities exist to consider the impact of these variables when controlled for other variables. While some of this work has been completed in ICCS 2016, further opportunities exist from the rich database provided by ICCS for analyses of the differing patterns of relationship that these student characteristics have on student civic knowledge across countries.

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