FURTHER STATISTICAL ANALYSIS OF THE IEA CIVICS DATA TO INVESTIGATE ATTITUDES TO CITIZENSHIP IN ENGLAND

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Abstract

Previous analysis of factors derived from the data for the cohort of 14-year-old students taking part in the IEA Civics Study in England has been published. This paper will look in more depth at this dataset, focussing in particular on the responses to the teacher and school questionnaires. Of particular interest are the responses to questions which are identical for pupils, teachers and schools; the inconsistencies between these responses are presented and discussed. Further multilevel modelling results are also presented, focusing on particular issues identified in the earlier analysis. It is hoped that the outcomes of these analyses for England will be of interest to other countries, and the methods presented could be extended to an international dimension.

INTRODUCTION

England was one of the countries taking part in the International Association for the Evaluation of Educational Achievement (IEA) Civic Education (CIVED) Study (see Torney-Purta et al., 2001). Phase 1 involved the collection of information, from a wide range of sources, in order to establish the national context for civic or citizenship education in schools; phase 2 involved a large-scale survey of students, schools and teachers. The survey investigated the teaching of citizenship in schools and students' sense of political and social awareness.

The Phase 2 work in England was conducted between November 1998 and June 2001. One hundred and twenty eight schools took part in a survey which included a test to be completed by students and questionnaires for students, teachers and headteachers. The survey was administered in October 1999 (see Kerr et al., 2002). A sample of 3043, 14-year-olds in the 128 schools completed a test and two questionnaires lasting 90 minutes. These assessed five types of student capacities: knowledge, skills, concepts, attitudes and actions. Three international cognitive

scales and 11 international attitude scales were derived from the pupil responses, and further national scales were obtained from the responses for England only. Multilevel analysis combining these pupil scales with teacher and school scales has been reported previously (see Schagen, 2002) and raised a number of interesting issues.

In this paper we shall explore some of these issues in more depth, based on the data for England. One question is the extent to which answers to the same questions by pupils, teachers and headteachers are consistent within the same school. Careful analysis of these responses indicates a great deal of inconsistency between different respondents, not only in the overall distribution of responses but between respondents supposedly addressing the situation in the same school.

Further scales have been derived at the school level to try to capture more information about the school climate, including the consistency of views between different respondents. These have been used in multilevel analysis of pupils scales in order to explore more deeply the factors which may affect civic knowledge, understanding and attitudes. Results of these analyses are reported below, and it is hoped that some of this methodology will be transferable to studies of the same data in other countries, or even internationally.

DERIVING MEASURES OF DISJUNCTION BETWEEN QUESTIONNAIRE RESPONDENTS

Students and school

There is one set of questions which overlap between the school questionnaire and the student survey (part 3): these relate to statements about what students in the school learn, in broad terms. There are 7 statements, which are set out below:

	In school I have learned to .../ Students in this school learn to ...
1	Understand people who have different ideas or points of view
2	Work together in groups (and cooperate) with other students
3	Contribute to solving problems in the community
4	Be a patriotic and loyal citizen of my/our country
5	How to act to protect the environment
6	Be concerned about what happens in other countries / take an interest in international affairs
7	About the importance of voting in national and local elections

In each case the responses were on a four-point scale from 'strongly disagree' to 'strongly agree' and these were assigned scores in the range from 1 to 4. The next stage was to match the students' responses to the schools and compute a 'discrepancy index' for the difference in responses for each question:

$$d(p, s) = 100^* (pr(p) - sr(s))/\sigma_p \qquad (1)$$

where $pr(p)$ is the response from student p (in school s) and $sr(s)$ is the response of

the corresponding school *s*. The standard deviation σ_p relates to the responses of all the students to the question. The index derived gives a dimensionless impression of the extent of discrepancy; positive values imply that students are more likely to give positive responses than schools, while negative values imply the converse. Table 1 below shows the values derived from the data for England.

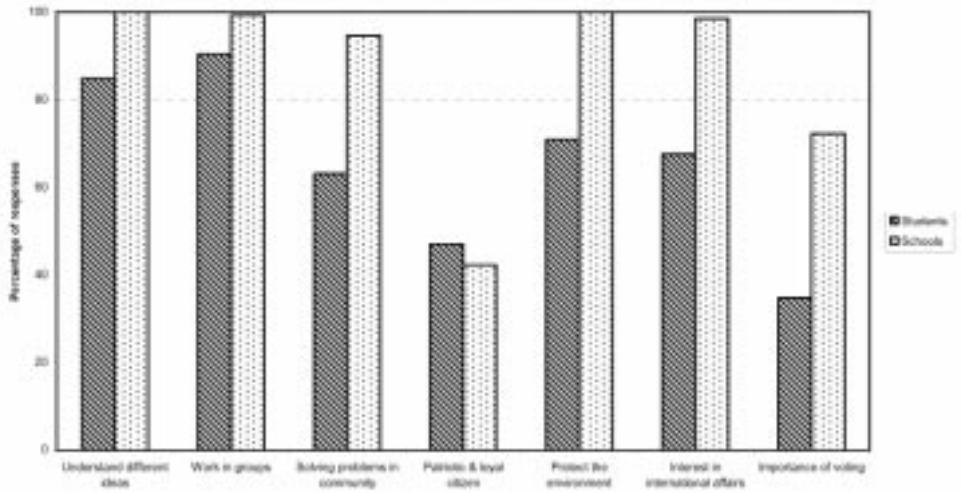
Table 1: Student/School Discrepancy Index Values for England

Question	*Mean Discrepancy*	*Standard deviation*	*Number of students*
1	-66	122	2857
2	-68	126	2905
3	-44	120	2703
4	+18	121	2466
5	-51	117	2756
6	-55	117	2732
7	-54	120	2495

There are some interesting features of these results. The largest discrepancy overall is for question 2 (working together in groups), closely followed by question 1 (understanding different points of view). Six out of the seven questions have an overall negative index, implying that in general students tend to be less positive than schools in their views of what is taught in this area. The sole exception is question 4 (patriotic and loyal citizen), where they appear to have given more positive responses.

Figure 1 below illustrates these differences graphically, showing the percentages saying 'agree' and 'strongly agree' for each question. Although it seems that the second question shows less discrepancy than some of the others, the high value of the index given above is due to the fact that most schools (71%) said 'strongly agree' while 55% of pupils said 'agree' and only 35% 'strongly agree'.

Figure 1: Student and School Responses (Percent saying 'Agree' and 'Strongly Agree')



Having derived indices at the student level, these were then aggregated to the school level. For each school with at least 5 students with valid responses, the mean and standard deviation of the discrepancy index were computed, giving a total of 14 measures for 130 schools. The next stage was to derive school-level measures of 'student-school disjunction', which would give a smaller set of indicators and could be used in further modelling. Principal factor analysis was used, and examination of the eigenvalues indicated that a three-factor solution was acceptable, explaining 43% of the variance. The measures which loaded heavily on each factor were then combined to give three 'student-school disjunction scores' for each school, as outlined below.

1	Mean of the standard deviations of all 7 discrepancy indices	Within-school variation in pupil responses
2	Mean of discrepancy indices for questions 3 to 7	Disjunction on learning about outside issues
3	Mean of discrepancy indices for questions 1 to 3	Disjunction on learning about understanding and cooperation

Finally, each of the three measures was scaled to have a mean of 100 and standard deviation of 15 across all 130 schools, and these values were carried forward for further modelling.

Students and teachers

In this case there were two groups of questions which overlapped between students and teachers: the same 7 as above (what students learn in school – we shall label these K1 to K7), plus 15 questions about what makes a good citizen (labelled B1 to B15). Although the latter set are slightly differently phrased and have different response labels for students and teachers ('not at all important' up to 'very important' versus 'strongly disagree' up to 'strongly agree') they are essentially parallel. Table 2 shows the discrepancies for these 22 questions, and these are illustrated in Figures 2 and 3.

Figure 2: Student and Teacher Responses to What Learnt in School (Percent saying 'Agree' and 'Strongly Agree')

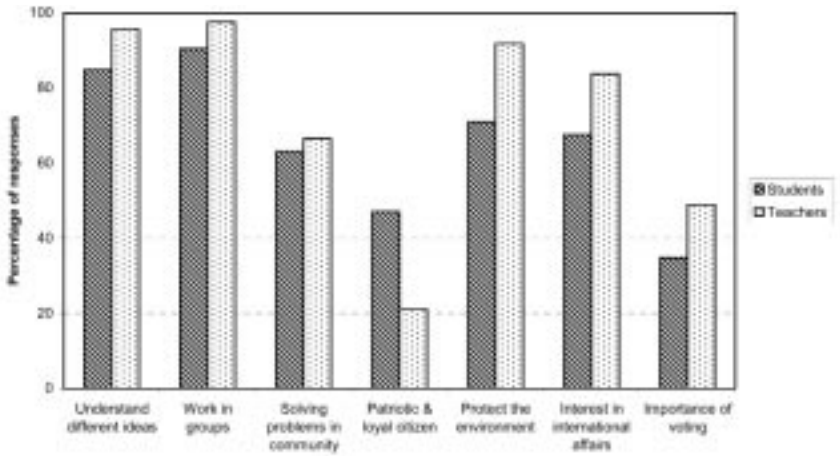


Figure 3: Student and Teacher Responses to What Makes a Good Citizen (Percent saying 'Agree' and 'Strongly Agree')

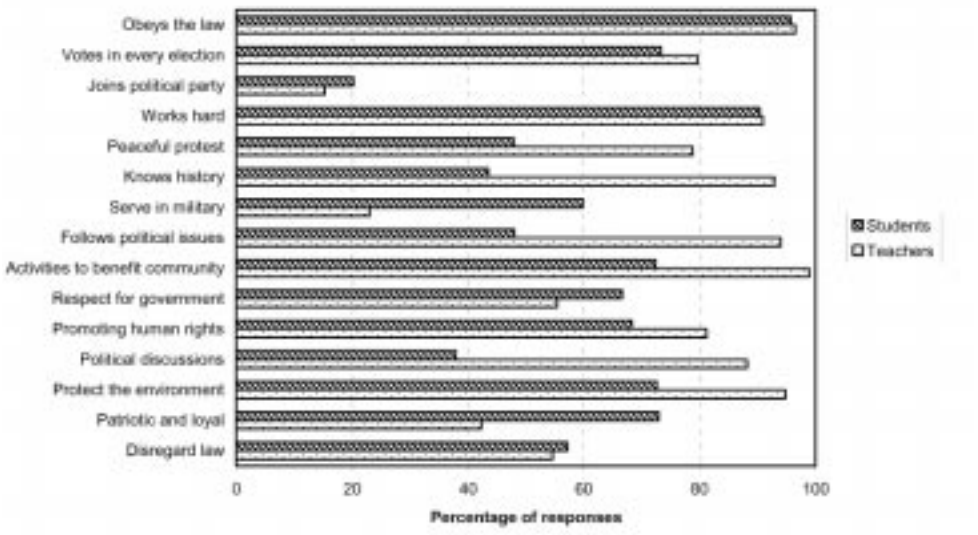


Table 2: Student/Teacher Discrepancy Index Values for England

Question	*Mean Discrepancy*	*Standard deviation*	*Number of student/ teacher combinations*
B1	70	146	8463
B2	-12	135	8379
B3	3	125	8078
B4	7	139	8304
B5	-31	125	7046
B6	-112	121	8373
B7	83	130	7884
B8	-99	122	7917
B9	-64	124	8008
B10	38	131	7807
B11	-13	128	7969
B12	-87	125	7641
B13	-32	120	8126
B14	87	133	7579
B15	32	127	6475
K1	-29	128	8017
K2	-18	132	8167
K3	10	134	7551
K4	62	126	7079
K5	-24	119	7717
K6	-21	125	7645
K7	-22	131	7032

There is an interesting variety in the student/teacher discrepancies, with certain patterns emerging. The most negative values (with students less likely to agree than teachers) are B6 (knowing country's history), B8 (following political issues), B12 (engaging in political discussion), and B9 (activities to benefit the community). On the other hand, students are more likely than teachers to agree with B14 (patriotic and loyal), B7 (willing to serve in military), B1 (obeying the law), and K4 (learning to be patriotic and loyal). Thus, overall, teachers are more likely to stress the importance of political engagement, knowledge and discussion, while students focus more on conventional aspects of good citizenship.

Once again these 22 indices were aggregated to the school level, calculating means and standard deviations. These 44 school-level values were input to a factor analysis, and four factors were extracted, explaining 28% of the variance. Descriptions of these four factors are shown below.

1	Mean of the standard deviations of all 22 discrepancy indices	Within-school variation in pupil responses v. teachers
2	Mean of discrepancy indices for B1 to B4, B6 to B10 & B14	Disjunction on views of questions conventional citizenship
3	Mean of discrepancy indices for questions K1 to K7	Disjunction on learning in school
4	Mean of discrepancy indices for B5, B11, B12 & B15	Disjunction on political questions engagement and protests

Again, the factor scores were scaled to a mean of 100 and standard deviation of 15.

Teachers and schools

The same seven questions as before (K1 to K7) were common to teachers and schools, together with four questions asking about how citizenship education should be taught in school (A1 to A4). The discrepancies are shown in Table 3 and Figure 4.

Figure 4: Teacher and School Responses to What Learnt in School and How Citizenship Should be Taught (Percent saying 'Agree' and 'Strongly Agree')

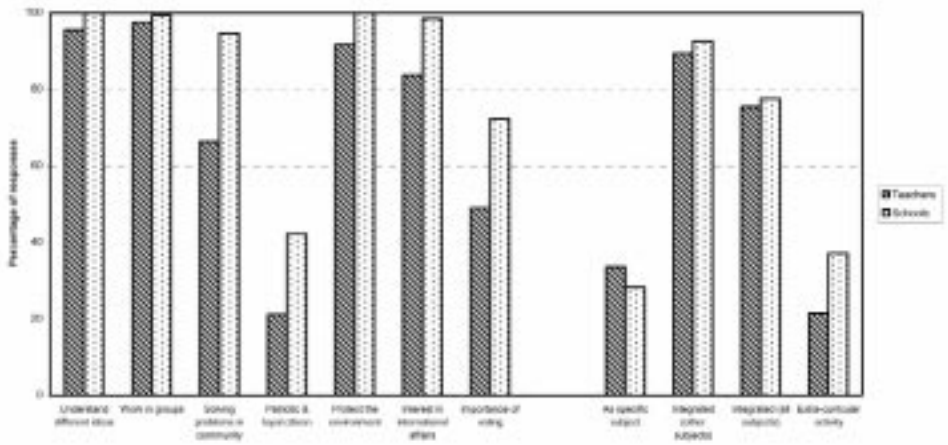


Table 3: Teacher/School Discrepancy Index Values for England

Question	*Mean Discrepancy*	*Standard deviation*	*Number of teachers*
A1	-46	133	367
A2	-56	130	367
A3	-64	128	365
A4	-58	132	351
K1	-37	128	366
K2	-44	130	366
K3	-37	120	362
K4	12	137	341
K5	3	129	343
K6	-15	139	334
K7	-34	148	319

The largest discrepancy values are for the ways in which citizenship should be taught, with the school responses being more positive about all options. Teachers are also more negative about most of the questions on what is taught in the school, apart from K4 (patriotic and loyal) and K5 (protect the environment).

Aggregation to school level yielded 11 measures – means only were computed, as with only about three teachers per school standard deviations would not have been very reliable. Principal factor analysis indicated three factors, explaining 36% of the variance. These factors are described below.

1	Mean of discrepancy indices for questions K3 to K7	Disjunction on views of conventional citizenship
2	Mean of discrepancy indices for questions K1 and K2	Disjunction on learning about understanding and cooperation
3	Mean of discrepancy indices for question A3 minus question A1	Disjunction on citizenship taught integrated or separate

Again, the factor scores were scaled to a mean of 100 and standard deviation of 15.

Analysis of discrepancy indices against school-level factors

The 10 indices derived in the previous section are intended to measure aspects of the school climate relating to the extent to which there is a common view between students, teachers and school managers about certain aspects of the school. It may well be that these indices are related to other school measures, such as size, location, academic performance or social deprivation. School-level regression analyses were carried out on the indices, controlling for available school background data, in order to explore this question.

The available school factors are described below:

- MET – whether the school is in a metropolitan rather than non-metropolitan LEA;
- NORTH – whether the school is in the North region of England (default = South);
- MIDLANDS – whether the school is in the Midlands (default = South);
- GCSE98 – an indicator of the school's overall performance in the 1998 GCSE exams, on a 5-point scale;
- FSM98 – an indicator of the school's overall level of social deprivation, measured by eligibility for free school meals in 1998, on a 5-point scale;
- SIZE – total number of pupils in the school;
- BOYSCH – whether the school is a boys' school (default = mixed);
- GIRLSCH – whether the schools is a girls' school (default = mixed).

Table 4 below shows the results of the regression analysis for each of the 10 indices, in terms of factors which were significant at the 5% level and their coefficients.

Table 4: Significant Coefficients for Regression of Discrepancy Indices Against School factors

Level of index	*Name*	*Description*	*Significant school factor*	*Coefficient*
School and Student	DISCSP1	Within-school variation in pupil responses	MET	5.5
			MIDLANDS	-7.3
			GCSE98	-3.4
	DISCSP2	Disjunction on learning about outside issues	SIZE	-0.028
	DISCSP3	Disjunction on learning about understanding and cooperation	No significant factors	
Teacher and student	DISCTP1	Within-school variation in pupil responses v. teachers	GCSE98	-2.9
	DISCTP2	Disjunction on views of conventional citizenship	GIRLSCH	24.8
	DISCTP3	Disjunction on learning in school	No significant factors	
	DISCTP4	Disjunction on political engagement and protests	No significant factors	
School and teacher	DISCST1	Disjunction on views of conventional citizenship	SIZE	-0.053
	DISCST2	Disjunction on learning about understanding and cooperation	GCSE98	-15.3
	DISCST3	Disjunction on citizenship taught integrated or separate	MET	-38.4

Thus schools in metropolitan areas are likely to have larger variations in pupils' views and less disjunction between school managers' and teachers' views on how citizenship should be taught. In the Midlands there seems to be less variation in pupils' views, but no other regional effects are apparent. Schools with higher levels of academic attainment appear to have less variation in pupils' views and less discrepancy between school managers' and teachers' views on learning about understanding and cooperation. Larger schools seem to have less disjunction between students and teachers on learning about outside issues, and between school managers and teachers about views on conventional citizenship. Finally, girls' schools appear to have large disjunctions between teachers and pupils in their views on conventional citizenship.

Inclusion of discrepancy indices in multilevel modelling of student attitude scales

Some of the multilevel models set up and run previously (see Schagen, 2002) have been rerun including the discrepancy scales as defined above. We have focussed on the 11 scales defined internationally to measure students' citizenship-related attitudes. It is not proposed to rehearse all the model descriptions and general results which were reported earlier, but instead to focus on the extent to which these new measures relate to pupil attitudes.

Table 5 below shows which of the 11 attitude scales are significantly related to each of the discrepancy indices, when controlling for all of the other background factors using multilevel modelling. The measures quoted are 'pseudo effect sizes', which aim to indicate the strength of the relationship in dimensionless terms; roughly speaking, the value quoted is the expected change in the outcome scale value (expressed as a percentage of the standard deviation in the outcome scale) for an 'average' change in the background variable. Schagen (2003) gives further details of this way of presenting multilevel results.

In the table, values with an asterisk represent situations where some of the same variables were used to define both the outcome scale and the discrepancy measure. Positive relationships in these cases can be expected, and should be largely discounted. Apart from these, the relationships presented in this table have some interesting messages.

It seems that the measure of variability in students' attitudes is positively related to the extent to which they regard the government as responsible for the economy, and negatively to trust in institutions, patriotism and women's rights. Schools in which students are more likely to agree that they learn about outside issues tend to give rise to a more positive attitude to political activities, while those with more agreement about learning to understand and cooperate with others tend to have more positive attitudes on a range of outcomes, but are more negative towards immigrants, and at the same time are less likely to support political activities.

Schools with pupils who are supportive of conventional citizenship (relative to their teachers) tend to have students who are more likely to support the idea of the government being responsible for the economy and to have more trust in institutions; however, they also tend to have more negative attitudes to immigrants. On the other hand, schools whose pupils have more positive responses about the learning in school about social issues (compared with their teachers) also tend to include those who are more positive towards immigrants.

Table 5: Significant Pseudo Effect Sizes from Multilevel Analysis of Pupil Attitude Scales against Discrepancy Indices

Level of index	*Name*	*Description*	*Attitude Scale with Significant Relationship*	*Quasi Effect Size*
School and Student	DISCSP1	Within-schoolvariation in pupil responses	Government responsible for economy	10
			Trust in institutions	-6
			Patriotism	-13
			Women's rights	-11
	DISCSP2	Disjunction on learning about outside issues	Political activities	10
	DISCSP3	Disjunction on learning about understanding and cooperation	Government responsible for economy	10
			Government responsible for society	12
			Women's rights	7
			Immigrants	-11
			School participation	15
			Political activities	-18
			Classroom climate	11
Teacher and student	DISCTP1	Within-school variation in pupil responses v. teachers	No significant relationships	
	DISCTP2	Disjunction on views of conventional citizenship	Conventional citizenship	7*
			Government responsible for economy	7
			Trust in institutions	8
			Immigrants	-10
	DISCTP3	Disjunction on learning in school	Immigrants	10
	DISCTP4	Disjunction on political engagement and protests	Social movement citizenship	9*
School and teacher	DISCST1	Disjunction on views of conventional citizenship	No significant relationships	
	DISCST2	Disjunction on learning about understanding and cooperation	Government responsible for economy	-10
			Government responsible for society	-8
			Political activities	10
	DISCST3	Disjunction on citizenship taught integrated or separate	No significant relationships	

* - Outcome variable is derived from some of the same variables as the discrepancy index.

Only one of the discrepancy measures between teachers and schools is significantly related to student attitudes: learning about understanding and cooperation. Teachers who were more likely to say this was the case (relative to their schools) were associated with students who were less likely to support government responsibility for the economy or society; however, they were more likely to support political activities.

SUMMARY AND CONCLUSIONS

The area we have been exploring is quite important and interesting, while at the same time being quite tricky to analyse. One of the strengths of the IEA Civics dataset is the fact that almost identical questions were asked of students, teachers and school managers – this gives us the possibility of assessing the extent to which these three key players share a common viewpoint within each school. The evidence seems to show that in many cases they do not, especially with respect to what is taught within the school. School managers seem to be the most positive, and students the least positive, about the extent to which they explicitly include citizenship issues within the curriculum.

Measures of discrepancy have been defined, based on factor analysis, and these have been included in multilevel analysis of the student attitude scales for England. The interpretation of the results obtained is not always straightforward, although there are some interesting indicators. For example, variability of students' responses within schools seems to be an indicator of particular kinds of overall responses, not all positive with respect to the development of citizenship. It may well be that citizenship education is more likely to be successful in situations where there is more of a shared understanding of what the school is actually doing.

The analysis reported here should be regarded as tentative and exploratory, and as 'work in progress'. The indicators need to be re-examined and probably refined to give a clearer picture of school climate. If this is successful, they should probably be extended to look at other countries within the Civics dataset. There is a great deal of potential locked inside this data – the task of statisticians and researchers is to try to unlock it.

References

Kerr, D., Lines, A., Blenkinsop, S., & Schagen, I. (2002). *What Citizenship and Education Mean to 14-year-olds.* Slough: NFER.

Schagen, I. (2002). Attitudes to Citizenship in England: Multilevel statistical analysis of the IEA Civics data. *Research Papers in Education, 17*(3), pp.229-259.

Schagen, I. (2003). Presenting the Results of Complex Models – Normalised Coefficients, Star Wars Plots, and Other Ideas, Presented at NFER/IoE seminar *The use of Effect Sizes in Educational Research* at the Institute of Education, 14th November 2003.

Torney-Purta, J., Lehmann, R., Oswald, H., & Schulz,W. (2001). *Citizenship and Education in Twenty Eight Countries: Civic Knowledge and Engagement at Age Fourteen.* Amsterdam: IEA.