6. School resources

Chapter outline

This chapter summarises teacher reports concerning the working conditions and resources available in their school for teaching reading, mathematics and science in Year 6 (Y6, ages 9-10). Principals also reported the extent to which their school's capacity to teach was limited by a shortage of resources.

Within each sub-section, findings for reading are presented first, followed by findings for mathematics and science. Outcomes for Northern Ireland are compared with the international averages.

Key Findings

- In terms of teaching space, teaching materials and supplies, teachers in Northern Ireland rated their working conditions relatively highly compared to international averages**.**
- In Northern Ireland, the majority of pupils were taught reading, mathematics and science by teachers who were classified as having *Minor Problems* or *Hardly Any Problems* with their working conditions; teachers of 16 per cent of pupils in all three subjects reported *Moderate Problems*.
- For all three subjects, principals reported that almost all pupils in Northern Ireland attended schools in which teaching was *Not Affected* or *Somewhat Affected* by resource shortages.
- For reading and mathematics, only 1 per cent of pupils were in schools in which teaching was reported to be *Affected A Lot* by shortages in resources; for science the equivalent figure was 3 per cent.
- Textbook use as the basis for teaching was more common internationally than in Northern Ireland, for all three subjects. Even so, textbooks were the basis for reading, mathematics and science teaching for 30, 43 and 9 per cent of pupils respectively in Northern Ireland.
- Teachers in Northern Ireland made use of a wide range of different materials for teaching reading. The most widely used resource was a *variety of children's books* followed by *reading schemes*.
- For mathematics in Northern Ireland, the most widely used resource was supplementary use of *computer software*, followed by *workbooks or worksheets*.
- For science, the same 'top two' were reversed: supplementary use of *workbooks or worksheets* was most common, followed by *computer software*.
- The most commonly used resources as a basis for teaching were *textbooks for* mathematics and *science equipment and materials* for science.
- Thirty-one per cent of pupils attended schools that had no school library. However, 97 per cent of pupils had a class library, often of 50 books or more.
- For reading, mathematics and science, Northern Ireland had among the highest levels of computer provision among all participating countries. The majority of Y6 pupils in Northern Ireland attended schools in which a computer was available for every one or two pupils.

Interpreting the data: percentages in tables

Most of the data in this chapter is derived from teacher and principal reports. Reported percentages refer to pupils and can usually be interpreted as the percentage of pupils whose teachers or principals reported a particular practice or circumstance.

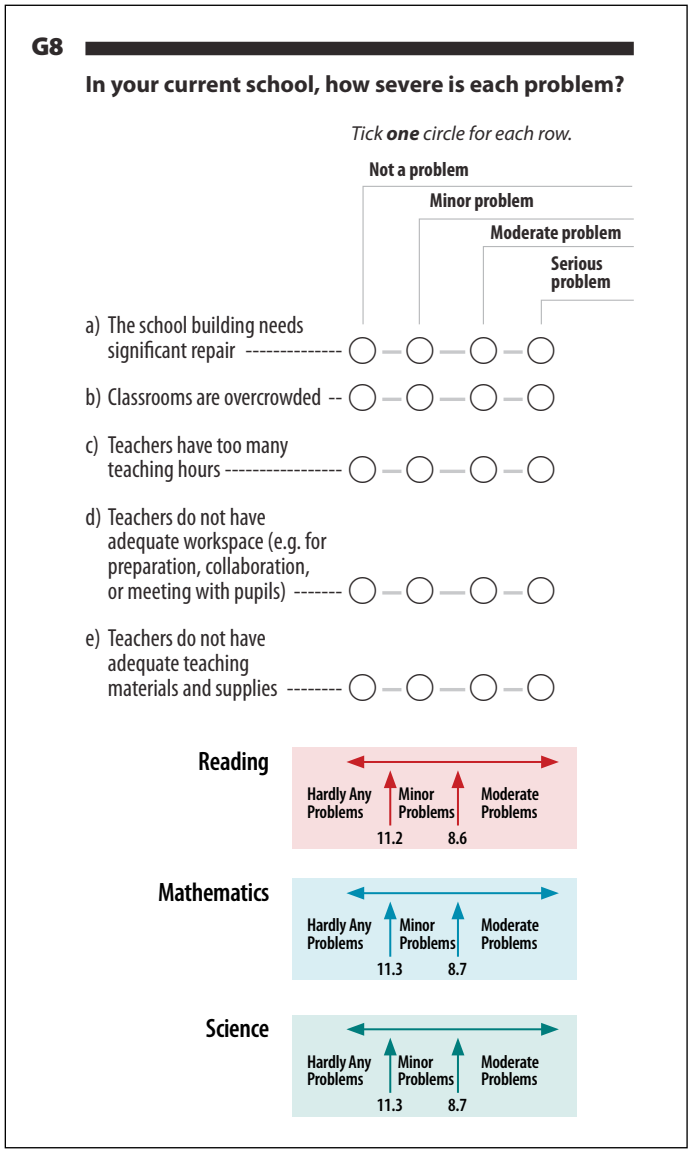
Y6 pupils were sampled by class. The Y6 teacher questionnaire would, in most cases therefore, have been completed by the class teacher of the sampled class. However, in some cases, it might have been completed by different teachers who teach these pupils reading, mathematics and/or science separately.

This means that the teacher-derived data for reading, mathematics and science may differ slightly as the sample of teachers in each group is not necessarily the same or the distribution of pupils within the sample of teachers may differ by subject.

6.1 Teacher working conditions

Teachers were asked to rate the working conditions in their current school in terms of five potential problem areas. Pupils were scored according to their teachers' responses concerning the five potential problem areas on the *Teacher Working Conditions* scale: buildings, workspace, teaching hours, classroom space and materials. The question asked is shown below (Figure 6.1) and it was analysed as a separate scale for each subject. The scale cut-scores for each subject are summarised below the question in Figure 6.1 and the data for each subject is shown in Table 6.1.

Figure 6.1 Teacher Working Conditions



Source: adapted from Exhibits 5.6 (international PIRLS report), 5.10 (international mathematics report) and 5.9 (international science report) and from the international version of the PIRLS and TIMSS 2011 Teacher Questionnaire [1]

Interpreting the data: indices and scales

In order to summarise data from a questionnaire, responses to several related items are sometimes combined to form an index or scale. The respondents to the questionnaire items are grouped according to their responses and the way in which responses have been categorised is shown for each index or scale. The data in an index or scale is often considered to be more reliable and valid than the responses to individual items.

1 http://timssandpirls.bc.edu

Table 6.1 Teacher working conditions

Reading

Reported by Teachers

Students were scored according to their teachers' responses concerning five potential problem areas on the *Teacher Working Conditions* scale. Students whose teachers had **Hardly Any Problems** with their working conditions had a score on the scale of at least 11.2, which corresponds to their teachers reporting "not a problem" for three of five areas and "minor problem" for the other two, on average. Students whose teachers had **Moderate Problems** had a score no higher than 8.6, which corresponds to their teachers reporting "moderate problem" for three of five conditions and "minor problem" for the other two, on average. All other students had teachers that reported **Minor Problems** with their working conditions.

Country		Hardly Any Problems		Minor Problems		Moderate Problems		Average Scale Score
		Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	
Northern Ireland	r	35 (4.8)	564 (4.8)	49 (4.3)	560 (4.2)	16 (3.5)	550 (6.5)	10.6 (0.20)
International Avg.		27 (0.5)	518 (0.9)	48 (0.6)	514 (0.7)	25 (0.5)	509 (0.9)	

Mathematics

Reported by Teachers

Students were scored according to their teachers' responses concerning five potential problem areas on the *Teacher Working Conditions* scale. Students whose teachers had **Hardly Any Problems** with their working conditions had a score on the scale of at least 11.3, which corresponds to their teachers reporting "not a problem" for three of five areas and "minor problem" for the other two, on average. Students whose teachers had **Moderate Problems** had a score no higher than 8.7, which corresponds to their teachers reporting "moderate problem" for three of five conditions and "minor problem" for the other two, on average. All other students had teachers that reported **Minor Problems** with their working conditions.

Country		Hardly Any Problems		Minor Problems		Moderate Problems		Average Scale Score
		Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	
Northern Ireland	r	35 (4.8)	567 (5.4)	49 (4.3)	564 (5.0)	16 (3.5)	553 (8.4)	10.7 (0.19)
International Avg.		26 (0.5)	498 (1.1)	47 (0.5)	491 (0.7)	27 (0.5)	487 (1.0)	

Science

Reported by Teachers

Students were scored according to their teachers' responses concerning five potential problem areas on the *Teacher Working Conditions* scale. Students whose teachers had **Hardly Any Problems** with their working conditions had a score on the scale of at least 11.3, which corresponds to their teachers reporting "not a problem" for three of five areas and "minor problem" for the other two, on average. Students whose teachers had **Moderate Problems** had a score no higher than 8.7, which corresponds to their teachers reporting "moderate problem" for three of five conditions and "minor problem" for the other two, on average. All other students had teachers that reported **Minor Problems** with their working conditions.

Country		Hardly Any Problems		Minor Problems		Moderate Problems		Average Scale Score
		Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	
Northern Ireland	r	34 (4.7)	522 (5.6)	50 (4.3)	517 (4.3)	16 (3.5)	506 (7.4)	10.6 (0.19)
International Avg.		26 (0.5)	494 (1.2)	47 (0.5)	487 (0.8)	27 (0.5)	481 (1.1)	

Centre point of scale set at 10.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.
An "r" indicates data are available for at least 70% but less than 85% of the pupils.

Sources: Exhibit 5.6, international PIRLS report, Exhibit 5.10, international mathematics report, and Exhibit 5.9, international science report

Teachers in Northern Ireland rated their working conditions relatively highly. The percentages in each category are similar for each subject, with teachers of around a third of pupils reporting *Hardly Any Problems* and those of approximately half reporting *Minor Problems* compared with international averages of around a quarter and a half respectively.

Internationally, there are apparent associations with achievement for each subject. Pupils in schools where teachers report *Moderate Problems* appear, on average, to have lower scores than those whose teachers report *Minor* or *Hardly Any Problems.*[2] However, the apparent differences for Northern Ireland are not likely to be significant.[3]

2 The direction of causality cannot be inferred.

3 Throughout this report, the term 'significant' refers to statistical significance. Although no significance tests have been carried out in this international analysis, the sizes of the standard errors for Northern Ireland suggest that the differences in achievement of pupils in each category are not likely to be statistically significant.

6.2 Resources used in teaching

Teachers were asked about a range of resources used for teaching reading, mathematics and science. They were also asked to indicate whether they used each resource as a basis for teaching or as a supplement to their teaching. Responses to this question are shown in Table 6.2.

Across all three subjects internationally, textbooks were the most common resource used as a basis for teaching, including in the high performing countries of Hong Kong and Finland.

6.2.1 Resources used in teaching reading

Teachers in Northern Ireland made use of a wide range of different materials, but the most widely used resource was *a variety of children's books:* teachers of 69 per cent of pupils in Northern Ireland used a variety of children's books as a basis for teaching. This was followed by the use of *reading schemes,* reported as a main resource by teachers of 54 per cent of pupils. The international averages for pupils being taught by these methods were both 27 per cent.

The other resources were more likely to be used as supplements. Teachers of 81 per cent of pupils used *workbooks or worksheets* as a supplement to their teaching of reading, as well as *textbooks* (66 per cent) and *computer software* (73 per cent).

Pupils in other countries were more likely to receive their main teaching through the use of *textbooks* (international mean 72 per cent) and *workbooks or worksheets* (40 per cent) compared with pupils in Northern Ireland (30 per cent and 17 per cent respectively as the main basis for teaching).

6.2.2 Resources used in teaching mathematics

Each of the four resources was more likely to be used as a supplement rather than as a basis for mathematics teaching. Teachers of 82 per cent of pupils reported that they used *computer software* as a supplement to their teaching of mathematics, as well as *workbooks or worksheets* (76 per cent), *concrete objects or materials that help pupils understand quantities or procedures* (63 per cent), and *textbooks* (56 per cent).

Teachers of 43 per cent used *Textbook*s as the main basis for teaching, followed by the use of *concrete objects or materials that help pupils understand quantities or procedures*. These were reported as a main resource by teachers of 37 per cent of pupils. The international averages for these approaches were 75 and 37 per cent respectively.

Pupils in other countries were more likely to receive their main teaching of mathematics through the use of *textbooks* (international mean 75 per cent) and *workbooks or worksheets* (46 per cent) compared with pupils in Northern Ireland (43 per cent and 24 per cent respectively as the main basis for teaching).

6.2.3 Resources used in teaching science

A similar picture emerged for science teaching: each of the four resources was more likely to be used as a supplement rather than as a basis for teaching. Teachers of 82 per cent of pupils reported that they used *workbooks or worksheets* as a supplement to their teaching of science, as well as *computer software* (69 per cent), *science equipment and materials* (66 per cent), and *textbooks* (52 per cent).

Teachers of 33 per cent used *science equipment and materials* as the main basis for teaching, followed by the use of *workbooks and worksheets* (reported as a main resource by teachers of 16 per cent of pupils). The international averages for pupils being taught primarily by these methods were 36 and 41 per cent respectively.

Once again, pupils in other countries were more likely to receive their main teaching of science through the use of *textbooks* (international mean 70 per cent) and *workbooks or worksheets* (41 per cent) compared with pupils in Northern Ireland (9 per cent and 16 per cent respectively as the main basis for teaching).

Table 6.2 Resources used in teaching

Reading

Reported by Teachers

Country	Per cent of Students Whose Teachers Use									
	A Variety of Children's Books		Textbooks		Reading Series		Workbooks or Worksheets		Computer Software for Reading Instruction	
	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement
Northern Ireland	r 69 (4.6)	31 (4.6)	r 30 (3.9)	66 (4.2)	r 54 (4.2)	41 (4.2)	r 17 (3.2)	81 (3.3)	r 9 (2.2)	73 (4.1)
International Avg.	27 (0.4)	69 (0.5)	72 (0.4)	23 (0.4)	27 (0.4)	59 (0.5)	40 (0.5)	56 (0.5)	8 (0.3)	48 (0.5)

Mathematics

Reported by Teachers

Country	Per cent of Students Whose Teachers Use							
	Textbooks		Workbooks or Worksheets		Concrete Objects or Materials that Help Students Understand Quantities or Procedures		Computer Software for Mathematics Instruction	
	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement
Northern Ireland	r 43 (4.5)	56 (4.5)	r 24 (4.1)	76 (4.1)	r 37 (3.9)	63 (3.9)	r 13 (3.1)	82 (3.3)
International Avg.	75 (0.4)	21 (0.4)	46 (0.5)	53 (0.5)	37 (0.5)	62 (0.5)	9 (0.3)	56 (0.5)

Science

Reported by Teachers

Country	Per cent of Students Whose Teachers Use							
	Textbooks		Workbooks or Worksheets		Science Equipment and Materials		Computer Software for Science Instruction	
	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement
Northern Ireland	r 9 (2.4)	52 (4.6)	r 16 (3.0)	82 (3.2)	r 33 (4.8)	66 (4.8)	r 11 (2.8)	69 (4.1)
International Avg.	70 (0.4)	22 (0.4)	41 (0.5)	56 (0.5)	36 (0.5)	60 (0.5)	11 (0.3)	53 (0.5)

( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

An "r" indicates data are available for at least 70% but less than 85% of the students.

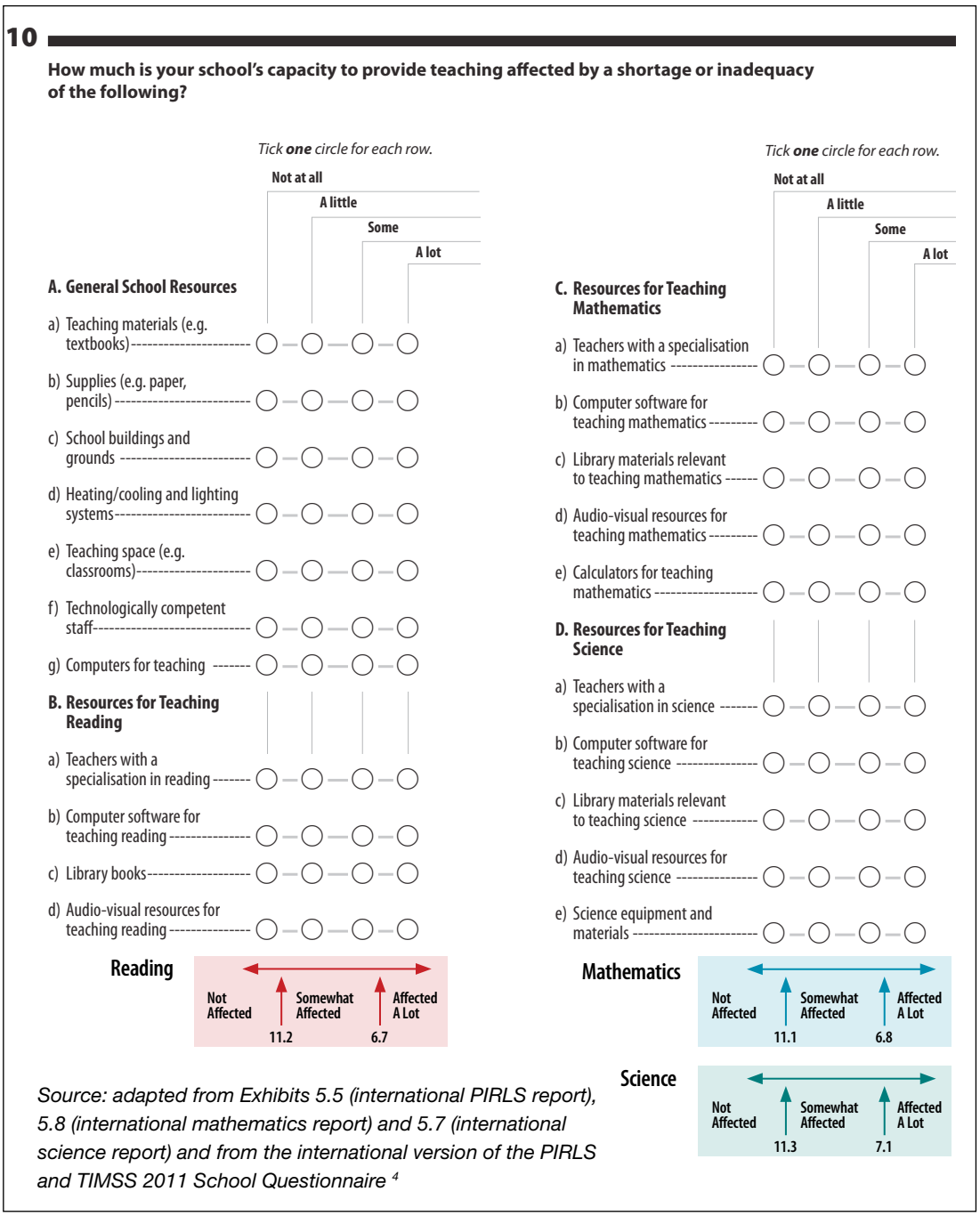
Sources: Exhibit 8.12, international PIRLS report, Exhibit 8.25, international mathematics report, and Exhibit 8.25, international science report

6.3 Views about limitations on teaching caused by resourcing

Principals were asked to rate the extent to which their school's capacity to teach was limited by a shortage of resources. These included general school resources as well as specific resources for teaching reading, mathematics and science.

Pupils were scored according to their teachers' responses concerning the listed resources in each case. The questions asked are shown below (Figure 6.2). In each case, the scale contained the general resources and the relevant subject-specific resources. The question was analysed as three separate scales, one for each subject. The data for each subject is shown in Table 6.3.

Figure 6.2



Source: adapted from Exhibits 5.5 (international PIRLS report), 5.8 (international mathematics report) and 5.7 (international science report) and from the international version of the PIRLS and TIMSS 2011 School Questionnaire [4]

4 http://timssandpirls.bc.edu

Table 6.3 Limitations on teaching caused by resourcing

Reading

Reported by Principals

Students were scored according to their principals' responses concerning eleven school and classroom resources on the *Reading Resource Shortages* scale. Students in schools where instruction was **Not Affected** by resource shortages had a score on the scale of at least 11.2, which corresponds to their principals reporting that shortages affected instruction "not at all" for six of the eleven resources and "a little" for the other five, on average. Students in schools where instruction was **Affected A Lot** had a score no higher than 6.7, which corresponds to their principals reporting that shortages affected instruction "a lot" for six of the eleven resources and "some" for the other five, on average. All other students attended schools where instruction was **Somewhat Affected** by resource shortages.

Country	Not Affected		Somewhat Affected		Affected A Lot		Average Scale Score
	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	
Northern Ireland	28 (4.4)	562 (5.6)	71 (4.5)	557 (3.0)	1 (1.0)	~ ~	10.5 (0.18)
International Avg.	24 (0.5)	523 (1.1)	71 (0.5)	511 (0.5)	5 (0.2)	478 (3.0)	

Mathematics

Reported by Principals

Students were scored according to their principals' responses concerning twelve school and classroom resources on the *Mathematics Resource Shortages* scale. Students in schools where instruction was **Not Affected** by resource shortages had a score on the scale of at least 11.1, which corresponds to their principals reporting that shortages affected instruction "not at all" for six of the twelve resources and "a little" for the other six, on average. Students in schools where instruction was **Affected A Lot** had a score no higher than 6.8, which corresponds to their principals reporting that shortages affected instruction "a lot" for six of the twelve resources and "some" for the other six, on average. All other students attended schools where instruction was **Somewhat Affected** by resource shortages.

Country	Not Affected		Somewhat Affected		Affected A Lot		Average Scale Score
	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	
Northern Ireland	29 (4.5)	568 (6.4)	70 (4.6)	561 (4.3)	1 (1.0)	~ ~	10.6 (0.17)
International Avg.	25 (0.5)	497 (1.2)	70 (0.5)	488 (0.6)	5 (0.2)	462 (3.5)	

Science

Reported by Principals

Students were scored according to their principals' responses concerning twelve school and classroom resources on the *Science Resource Shortages* scale. Students in schools where instruction was **Not Affected** by resource shortages had a score on the scale of at least 11.3, which corresponds to their principals reporting that shortages affected instruction "not at all" for six of the twelve resources and "a little" for the other six, on average. Students in schools where instruction was **Affected A Lot** had a score no higher than 7.1, which corresponds to their principals reporting that shortages affected instruction "a lot" for six of the twelve resources and "some" for the other six, on average. All other students attended schools where instruction was **Somewhat Affected** by resource shortages.

Country	Not Affected		Somewhat Affected		Affected A Lot		Average Scale Score
	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	
Northern Ireland	23 (4.1)	523 (6.9)	74 (4.0)	516 (3.6)	3 (2.4)	501 (8.0)	10.3 (0.18)
International Avg.	22 (0.4)	495 (1.3)	72 (0.5)	485 (0.6)	7 (0.3)	460 (4.0)	

Centre point of scale set at 10.
Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.
A tilde (~) indicates insufficient data to report achievement.

Source: Exhibit 5.5, international PIRLS report, Exhibit 5.8, international mathematics report, and Exhibit 5.7, international science report

According to their principals, the majority of pupils in Northern Ireland (just under three quarters) were *Somewhat Affected* by resource shortages. Based on principals' responses, around a quarter of pupils were in schools in the *Not Affected* category (a little lower for science than for reading or mathematics), and the remainder were in the *Affected A Lot* category (1 per cent for reading and mathematics, and 3 per cent for science).

These figures were relatively close to the international averages in each case. However, for all three subjects, Northern Ireland had fewer pupils in the *Affected A Lot* category, compared with the international averages for that category.

Internationally, the pattern was for students in less well resourced schools to show lower attainment in each subject. This pattern does not hold for pupils in Northern Ireland: due to the sizes of the standard errors, the apparent trends were unlikely to be significant at national level in Northern Ireland.

6.4 School library books and classroom libraries: reading

Principals were asked to indicate the number of books, with different titles, available in their school libraries (Table 6.4) and teachers were asked to provide information about the kinds of books that were available to pupils in their class libraries (Table 6.5). Questions relating to school and class libraries were only asked of participants in the PIRLS survey and not of TIMSS participants.

6.4.1 School libraries

Principals in Northern Ireland reported that 51 per cent of pupils attended schools that had between 501 and 5,000 book titles in their school libraries, whereas the international average was 40 per cent. Fifteen per cent of pupils attended schools with 500 books or fewer and only 3 per cent of pupils went to schools with over 5,000 book titles in their libraries (the international averages were 18 per cent and 28 per cent respectively). However, 31 per cent of pupils attended schools that had no school library, whereas the international average was 14 per cent.

In comparator countries, Hong Kong and Singapore reported most school libraries with more than 5,000 books (in the schools of 82 per cent and 77 per cent of pupils respectively). Northern Ireland and Finland reported the fewest large school libraries with more than 5,000 books (3 per cent and 4 per cent respectively). Among comparator countries, the Republic of Ireland (49 per cent), Northern Ireland (31 per cent) and Finland (21 per cent) had a high percentage of pupils with no school libraries. The international average was 14 per cent. Internationally, there was an association between the size of the school library and achievement, although this was not the case in Northern Ireland. The international report points out that some countries have well-resourced classroom libraries rather than a larger central library, so the lack of a school library does not necessarily mean that pupils do not have access to a variety of books. Demographics within a country, particularly the range of rural and urban communities that schools serve, seem likely to have a bearing on the size and availability of libraries at different levels.

6.4.2 Classroom libraries

Teachers of 97 per cent of pupils in Northern Ireland reported that they had a class library. Class libraries had more than 50 books for 89 per cent of pupils in Northern Ireland, and 91 per cent of pupils had teachers who gave time to use the class library at least once a week. The international averages on these scales were 32 and 60 per cent respectively. Eighty-eight per cent of pupils were able to borrow books from their class library. This is a high proportion: internationally the average was 56 per cent.

Internationally, on average, 72 per cent of pupils had class libraries and their average reading achievement was higher than their counterparts in classrooms without libraries (514 compared to 507 scale points).

For most of the comparator countries, class libraries were available for a smaller percentage of their pupils than in Northern Ireland. The exceptions were New Zealand and the Republic of Ireland. In Northern Ireland, access to a class library did not appear to be associated with pupil attainment.

Among the comparator countries, Finland is notable for having class libraries available to just 51 per cent of pupils. Pupils in Finland, New Zealand, Australia and Singapore were also much more likely than Northern Ireland to have fewer than 50 books in their class libraries. Teachers in Finland and England reported having fewer magazines in their class libraries than those in other comparator countries.

Table 6.4 Size of school library

Reported by Principals (Does not include classroom libraries)

Country	More than 5,000 Book Titles		501–5,000 Book Titles		500 Book Titles or Fewer		No School Library	
	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement
Northern Ireland r	3 (1.5)	549 (11.0)	51 (4.6)	556 (4.0)	15 (3.9)	549 (7.9)	31 (4.0)	569 (5.5)
International Avg.	28 (0.4)	525 (1.4)	40 (0.6)	513 (1.1)	18 (0.4)	500 (1.3)	14 (0.4)	498 (1.8)

Table 6.5 Classroom libraries

Reported by Teachers

Country	Have a Classroom Library			Per cent of Students	Per cent of Students	Per cent of Students	Per cent of Students	Per cent of Students
	Per cent of Students	Average Achievement		With More than 50 Books in Their Classroom Library	With At Least 3 Magazine Titles in Their Classroom Library	Given Class Time to Use Classroom Library At Least Once a Week	Who Can Borrow Books From Classroom Library	Whose Teachers Take Them to Library Other than the Classroom Library At Least Once a Month
	Yes	Yes	No					
Northern Ireland	r 97 (1.5)	561 (2.9)	532 (33.7)	r 89 (2.6)	r 35 (4.2)	r 91 (2.6)	r 88 (3.2)	r 61 (4.5)
International Avg.	72 (0.5)	514 (0.6)	507 (1.3)	32 (0.4)	31 (0.5)	60 (0.5)	56 (0.5)	68 (0.5)

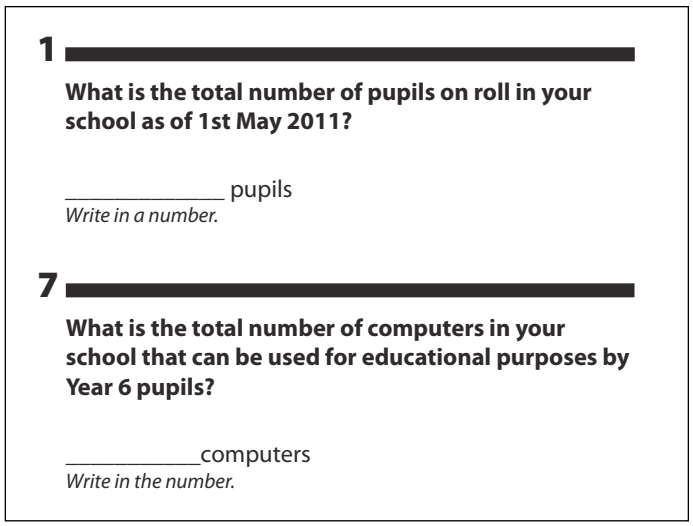
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.
An "r" indicates data are available for at least 70% but less than 85% of the students.

Sources: Exhibits 5.7 and 8.13, international PIRLS report

6.5 Availability of computers for teaching

In order to calculate the availability of computers for lessons, principals were asked to indicate the number of pupils in Y6 and the total number of computers available for teaching. The question asked is shown below (Figure 6.3) and outcomes were generated for each subject. The calculated ratios for Northern Ireland are shown in Table 6.6.

Figure 6.3 Availability of computers for teaching



1

What is the total number of pupils on roll in your school as of 1st May 2011?

_____ pupils

Write in a number.

7

What is the total number of computers in your school that can be used for educational purposes by Year 6 pupils?

_____computers

Write in the number.

Source: adapted from the international version of the PIRLS and TIMSS 2011 School Questionnaire[5]

In Northern Ireland, just over three quarters of pupils were in schools where a computer was available for every one to two pupils. The international average was 38 to 41 per cent. For 17 per cent of pupils in Northern Ireland, computers were shared between three to five pupils and for the remaining 5 per cent, the ratio was one computer for six or more pupils. Principals in Northern Ireland reported among the highest levels of computer provision among comparator countries. Only headteachers in England reported more (89 per cent to 90 per cent). Internationally, there was considerable variation from country to country. In most of the comparator countries, teachers reported computer provision above the international average.

There were no clear patterns of achievement across the different categories of computer availability.[6] It is worth bearing in mind that the relationship between computer availability and average attainment is complex. In some countries computer availability is highly interrelated with socio-economic levels, in others computers are used widely for remedial purposes. In addition, teaching practice and the quality of software programmes varies greatly between, and within, countries. For these, and other, reasons achievement data in this area should be interpreted with caution.

5 http://timssandpirls.bc.edu

6 Tests of statistical significance were not carried out in this international analysis, but the sizes of the standard errors in the national data suggest that any apparent differences in attainment across categories would not be statistically significant.

Table 6.6 Availability of computers for teaching

Reading

Reported by Principals

Country		1 Computer for 1–2 Students		1 Computer for 3–5 Students		1 Computer for 6 or More Students		No Computers Available	
		Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement
Northern Ireland	r	77 (4.3)	557 (3.1)	17 (3.8)	562 (7.1)	5 (2.3)	564 (9.5)	0 (0.0)	~ ~
International Avg.		41 (0.5)	513 (1.0)	29 (0.5)	517 (0.9)	23 (0.5)	517 (1.3)	7 (0.3)	488 (2.5)

Mathematics

Reported by Principals

Country		1 Computer for 1–2 Students		1 Computer for 3–5 Students		1 Computer for 6 or More Students		No Computers Available	
		Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement
Northern Ireland	r	77 (4.3)	558 (4.4)	17 (3.8)	574 (6.6)	5 (2.3)	569 (11.1)	0 (0.0)	~ ~
International Avg.		38 (0.5)	491 (1.1)	30 (0.5)	493 (1.2)	24 (0.5)	493 (1.3)	8 (0.3)	452 (2.9)

Science

Reported by Principals

Country		1 Computer for 1–2 Students		1 Computer for 3–5 Students		1 Computer for 6 or More Students		No Computers Available	
		Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement	Per cent of Students	Average Achievement
Northern Ireland	r	77 (4.3)	514 (4.0)	17 (3.8)	524 (5.9)	5 (2.3)	523 (15.9)	0 (0.0)	~ ~
International Avg.		38 (0.5)	486 (1.2)	30 (0.5)	487 (1.3)	24 (0.5)	491 (1.4)	8 (0.3)	450 (2.8)

( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.
A tilde (~) indicates insufficient data to report achievement.
An "r" indicates data are available for at least 70% but less than 85% of the students.

Sources: Exhibits 5.8, international PIRLS report, Exhibit 5.14, international mathematics report, and Exhibit 5.13, international science report

6.6 Conclusion

Teachers were asked about a number of potential problems in working conditions that might impact on their teaching. These included the condition of their school buildings and the workspace available for preparation, collaboration and working with pupils. They were also asked about teaching conditions such as overcrowding in classrooms, the availability of teaching materials and whether they had too many teaching hours. Overall, the majority of pupils in Northern Ireland were taught by teachers classified as having *Minor Problems* or *Hardly Any Problems* with their working conditions, although a sizeable minority reported *Moderate Problems*.

Textbook use as a basis for teaching was more common internationally than in Northern Ireland, for all three subjects. Children's books were the most commonly used resources for teaching reading followed by reading schemes. A variety of resources were used in mathematics and science teaching.

Shortage of resources, generally, was not an issue for teachers in Northern Ireland and very few reported that their teaching was limited by lack of resources.

Compared with international averages, pupils in Northern Ireland were less likely to attend schools with a school library, but more likely to have a class library of 50 books or more.

In terms of computer provision, teachers in Northern Ireland reported among the highest availability of computers for teaching of all participating countries. This was true for the teaching of all three subjects, with the majority of Y6 pupils attending schools in which computers were available for every one to two pupils.