CHAPTER 7

School Context for Learning and Instruction

Chapter 7 presents findings about the school contexts for learning and instruction in science, including school characteristics, policies, and practices. Information is presented about the extent of school resources in each country, including computers and Internet access. Data also are provided about the role of the school principal and issues related to school climate and environment, including attendance problems and school safety.

What School Resources Are Available to Support Science Learning?

Some school resources are specific to science, which is unique among school subjects in that it requires an emphasis on laboratory exploration. Many other school resources are general ones that improve learning opportunities across the curriculum. All the available resources can work together to support science learning and instruction.

To measure the extent of school resources in each of the participating countries, timss created an index of availability of school resources for science instruction (asrsi). As described in Exhibit 7.1, the index is based on schools' average response to five questions about shortages that affect general capacity to provide instruction and six questions about shortages that affect science instruction in particular. Students were placed in the high category if principals reported that shortages, both general and for science in particular, had no or little effect on instructional capacity. The medium level indicates that one type of shortage affects instruction some or a lot, and the low level that both shortages affect it some or a lot.

On average internationally, only 18 percent of the students were in schools reporting that both shortages had little effect on instruction, and 63 percent were in the middle category. Only in two countries – Belgium (Flemish) and Singapore – were the majority of students in the high category. In very few countries – Moldova, the Russian Federation, and Thailand – were the majority of students in1 Tf0.5tries – ulum. -3.9-lof stinoF me or a lot.

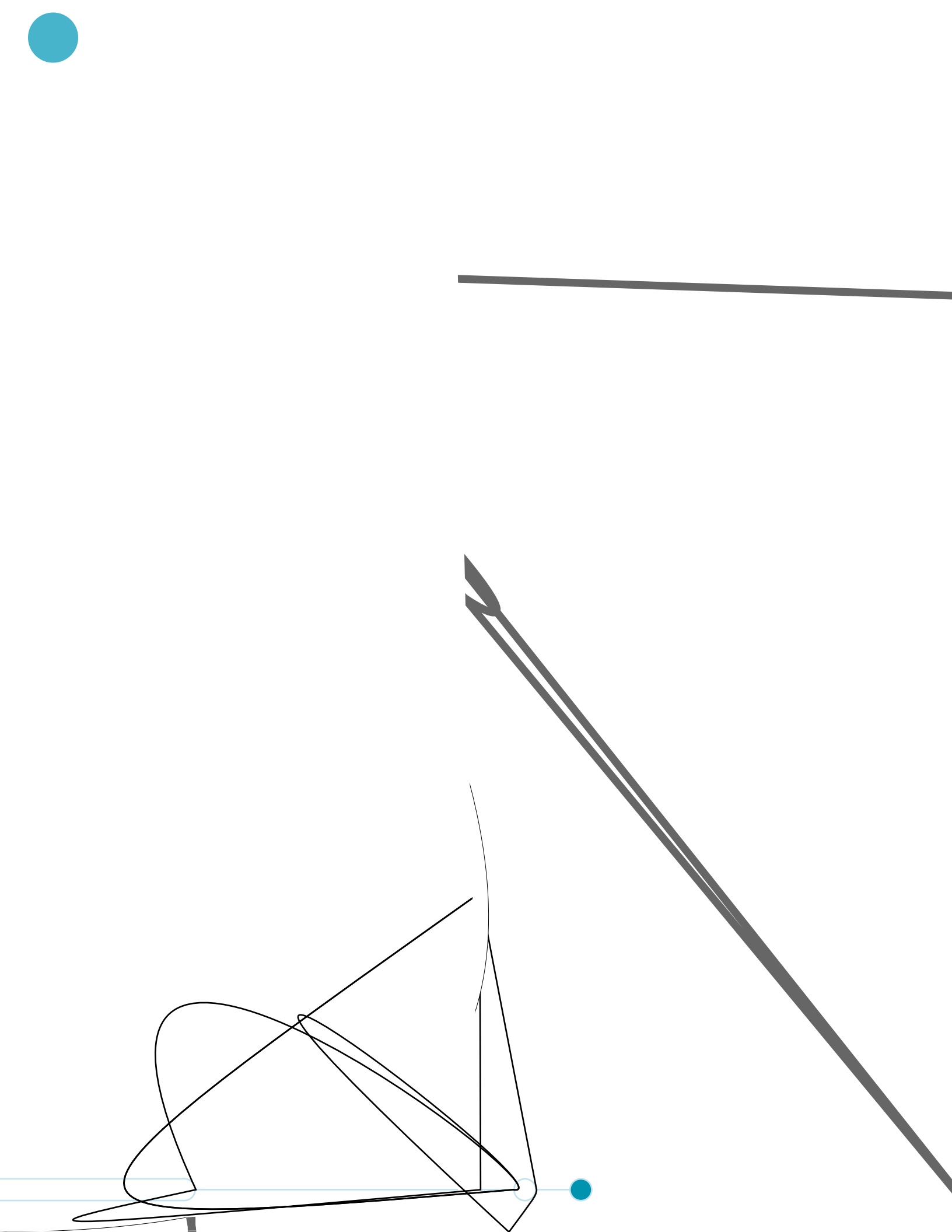
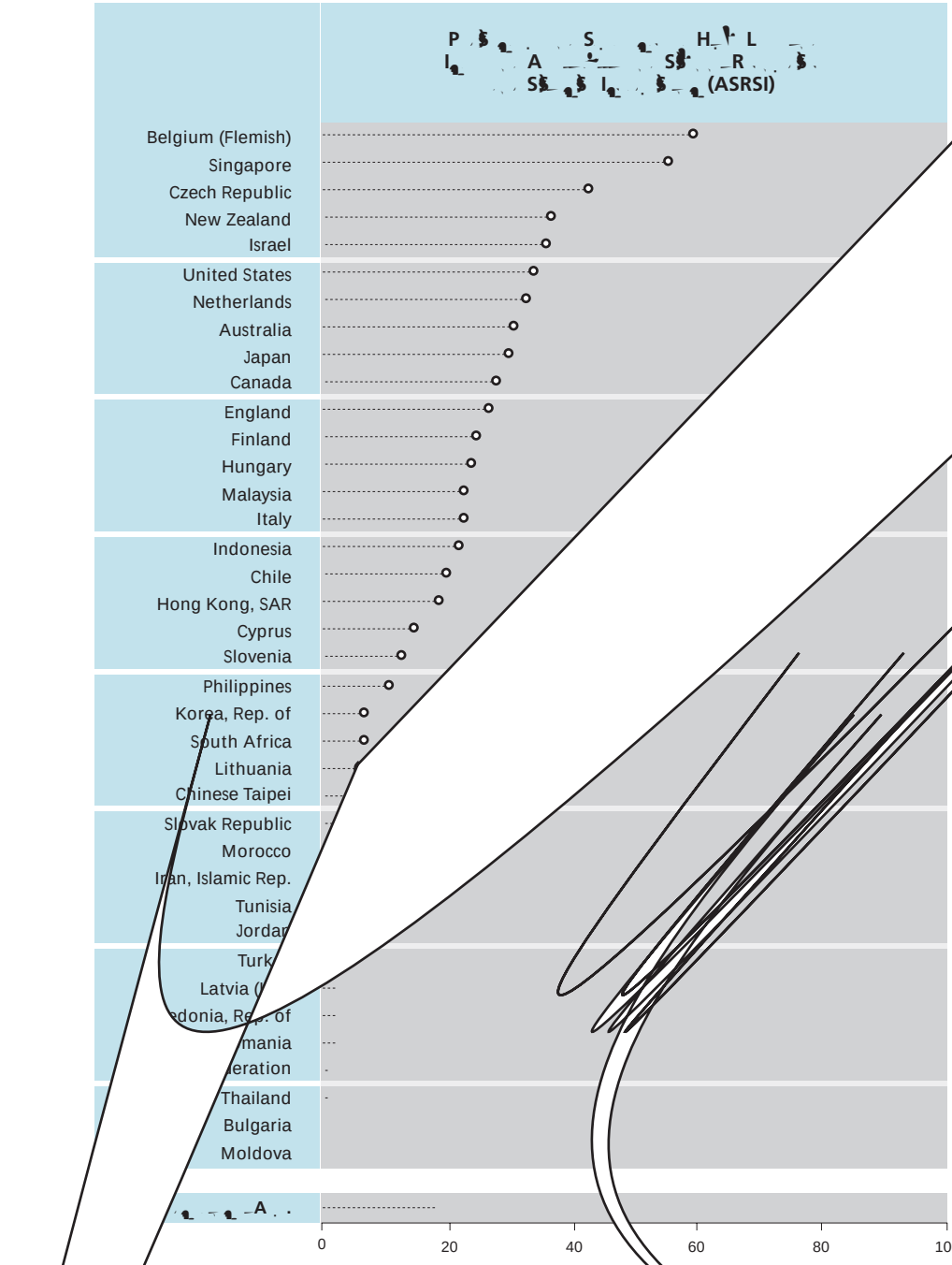


Exhibit 7.2 presents trends in the index of availability of school resources for science instruction. Internationally on average, there was little or no change between 1995 and 1999 in the percentages of students at the three index levels. Four countries – Israel, Italy, New Zealand, and the United States – had significant increases in the percentages of students in the high category. The United States, in addition to having a significant increase in the high category, had effectively no change in the low category and a significant decrease in the middle category.

Index based on schools' average response to five questions about shortages that affect general capacity to provide instruction (instructional materials; budget for supplies; school buildings and grounds; heating/cooling and lighting systems; instructional space), and the average response to six questions about shortages that affect science instruction (laboratory equipment and materials; computers; computer software; calculators; library materials; audio-visual resources) (see reference exhibits R4.1–R4.2). High level indicates that both shortages, on average, affect instructional capacity none or a little. Medium level indicates that one shortage affects instructional capacity


(ASRSI)
Belgium (Flemish)
Singapore
Czech Republic
New Zealand
Israel
United States
Netherlands
Australia
Japan
Canada
England
Finland
Hungary
Malaysia
Italy
Indonesia
Chile
Hong Kong, SAR
Cyprus
Slovenia
Philippines
Korea, Rep. of
South Africa
Lithuania
Chinese Taipei
Slovak Republic
Morocco
Tunisia
Thailand
Bulgaria
Moldova
0
20
40
60
80
100

Australia	r	42 (5.2)	31 (3.8)	-11 (6.5)	●	52 (5.4)	60 (4.0)	8 (6.7)	●	6 (2.3)	9 (2.5)	3 (3.5)	●
Belgium (Flemish)		52 (5.8)	60 (4.5)	8 (7.3)	●	48 (5.8)	40 (4.5)	-7 (7.3)	●	1 (0.8)	0 (0.0)	-1 (0.8)	●
Canada		23 (2.9)	28 (2.0)	5 (3.5)	●	75 (2.8)	66 (2.4)	-8 (3.7)	●	2 (0.7)	6 (1.3)	4 (1.4)	●
Cyprus	r	23 (0.5)	15 (0.1)	-8 (0.5)	▼	69 (0.6)	80 (0.2)	11 (0.6)	▲	8 (0.4)	5 (0.2)	-3 (0.5)	▼
Czech Republic		30 (4.8)	43 (4.3)	13 (6.5)	●	69 (4.8)	57 (4.3)	-13 (6.5)	●	0 (0.4)	0 (0.1)	0 (0.4)	●
England	r	24 (4.5)	27 (4.2)	3 (6.2)	●	71 (4.8)	68 (4.6)	-3 (6.6)	●	4 (1.6)	5 (2.1)	1 (2.7)	●
Hong Kong, SAR		23 (5.4)	19 (3.3)	-4 (6.3)	●	72 (5.7)	73 (3.5)	1 (6.7)	●	5 (2.6)	8 (2.3)		

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What Is the Role of the School Principal?

To better understand the roles and responsibilities of schools across countries, timss asked school principals how much time per month they spend on various school-related activities. More specifically, they were asked how much time they spend on instructional leadership activities, including discussing educational objectives with teachers, initiating curriculum revisions and planning, training teachers, and engaging in professional development activities. They were asked how much time they spend per month talking with parents, counseling and disciplining students, and responding to requests from local, regional, or national education officials. They also responded to questions about how much time they spend carrying out administrative duties, including hiring teachers, representing the school in the community and at official meetings, and doing internal tasks (e.g., regulations, school budget, and timetable). Finally, they were asked how much time they spend teaching. The results presented in Exhibit 7.3 show that principals reported spending, internationally on average, 51 hours per month on administrative duties, 35 hours per month communicating with various constituents, 33 hours per month on instructional leadership activities, and 16 hours per month teaching.[1]

Countries where principals reported spending an average of at least 75 hours per month on administrative duties included Australia, Chinese Taipei, Hong Kong, and New Zealand. Principals reported spending at least 50 hours per month communicating with various groups in Australia, Canada, and the United States. Principals in 10 countries reported spending at least 40 hours per month on instructional leadership activities, and in eight countries they reported that teaching duties (including preparation) occupied at least 30 hours per month.

It is noteworthy that a number of countries, such as Australia, Canada, Chinese Taipei, Hong Kong, New Zealand, Singapore, Thailand, and the United States, have similar patterns in principals' use of time. For example, unlike in most European countries, principals in these countries spend relatively little time teaching, and most of it on administrative duties, communicating with constituents, and engaging in instructional leadership activities.

	A T H P M S A			
	I L A [2]	C S P E O [3]	A D [4]	
Australia	r 33 (1.9)	r 50 (2.7)	r 75 (3.7	
Belgium (Flemish)	29 (2.3)	27 (2.1)	56 (	
Bulgaria	38 (2.5)	39 (1.9)	4	
Canada	25 (1.1)	54 (1.4)		
Chile	31 (1.4)	36 (1.5)		
Chinese Taipei	24 (1.4)	34 (1.7)		
Cyprus	r 18 (0.1)	r 46 (0.1)		
Czech Republic	32 (1.9)	33 (1.8)		
England				
Finland	27 (1.5)	29 (1.2)		
Hong Kong, SAR	r 43 (3.2)	r 29 (1.5		
Hungary	47 (2.1)	28 (		
Indonesia	15 (1.8)	20		
Iran, Islamic Rep.	28 (1.6)	4		
Israel	43 (2.4)			
Italy	36 (1.4)			
Japan	33 (2.0)			
Jordan	31 (1.8)			
Korea, Rep. of	30 (2.1)			
Latvia (LSS)	r 33 (1.9)	r		
Lithuania	40 (1.7)			
Macedonia, Rep. of	40 (2.2)			
Malaysia	24 (1.5)			
Moldova	r 45 (1.9)	r		
Morocco	9 (0.8)			
Netherlands	r 42 (4.0)	r		
New Zealand	r 39 (2.0)	r 4		
Philippines	30 (2.0)	31		
Romania	31 (1.6)	32 (1.		
Russian Federation	r 44 (1.9)	r 33 (1.7)		
Singapore	45 (2.2)	46 (1.9)		
Slovak Republic	36 (1.8)	31 (1.5)		
Slovenia	43 (2.2)	29 (1.2)	41 (2.	
South Africa	19 (1.2)	34 (2.3)	43 (3.4)	
Thailand	37 (2.2)	32 (1.7)	68 (3.8)	
Tunisia	28 (2.0)	47 (2.6)	55 (2.6)	
Turkey	25 (1.7)	43 (2.0)	46 (2.9)	17 (1.9)
United States	r 34 (1.9)	r 52 (2.4)	r 56 (3.2)	r 3 (0.6)
I A	33 (0.3)	35 (0.3)	51 (0.5)	16 (0.2)

What Are the Schools' Expectations of Parents?

The schools' expectations for parental involvement are shown in Exhibit 7.4. Clearly schools expect help from parents. On average across countries, 85 percent of the students attended schools expecting parents to ensure that their children complete their homework, and 79 percent attended schools expecting parents to volunteer for school projects or field trips. About half the students were in schools expecting parents to help raise funds and to serve on committees. Only 28 percent were in schools expecting parents to help as aides in the classroom.

At the country level, in all countries with the exception of Japan, at least 60 percent of students were in schools where parents were expected to ensure that their children complete their homework. Twenty countries had at least 90 percent of their students in such schools, and in Canada and the United States almost all students (99 percent) were in such schools. The expectation that parents would serve as classroom aides was especially high in Iran, and low in Finland, Indonesia, Japan, and New Zealand. All Malaysian and Lithuanian students were in schools where parents were expected to volunteer for school projects or field trips. Raising funds was an expectation of parents for at least 75 percent of the students in Cyprus, Morocco, the Slovak Republic, South Africa, and Turkey. At least three-quarters of students were in schools where parents were expected to serve on committees in Australia, Iran, Latvia (lss), Macedonia, Romania, South Africa, and Turkey.

	P S W S R T T E S P B I S R A S				
	B S C C H	S T A C	V S P J F T	R F S	S C
Australia		6 (1.9)	66 (4.5)	61 (5.4)	78 (3.9)
Belgium (Flemish)		19 (3.7)	39 (4.3)	9 (2.7)	10 (2.7)
Bulgaria		64 (5.1)	63 (5.5)	55 (5.2)	22 (3.5)
Canada		15 (1.7)	82 (2.2)	52 (3.4)	55 (2.7)
Chile		73 (3.3)	94 (1.9)	57 (3.6)	33 (3.1)
Chinese Taipei		58 (4.2)	90 (2.5)	41 (4.2)	56 (4.4)
Cyprus		15 (0.1)	44 (0.2)	87 (0.1)	18 (0.2)
Czech Republic		[illegible]	[illegible]	[illegible]	[illegible]
England		25 (3.1 (94)-468.6((2.1)7143 -1.5714	(62)-468.6((4.25(59)-468.5((44 ((4.5))	(96)-418.6((2.4)) 0 -1.4	
Finland			72 (4.3) (3.8)77 (3.9).6((3.7))	23 (4.2)	57 (4.8)
Hong Kong, SAR			82 (2.8)	60 (4.6)	21 (3.7)
Hungary			95 (1.9)	12 (2.5)	35 (3.9)
Indonesia			70 (4.5)	59 (4.2)	28 (4.4)
Iran, Islamic Rep.			96 (2.0)	74 (3.7)	85 (2.7)
Israel			90 (2.4)	42 (4.6)	48 (4.8)
Italy			70 (3.4)	25 (3.1)	42 (3.7)
Japan			81 (2.8)	6 (2.0)	8 (2.2)
Jordan			77 (3.9)	29 (4.1)	17 (3.3)
Korea, Rep. of			71 (3.8)	31 (3.8)	44 (4.2)
Latvia (LSS)			95 (2.1)	45 (4.7)	75 (4.0)
Lithuania			100 (0.0)	62 (3.9)	73 (3.8)
Macedonia, Rep. of			48 (4.1)	53 (3.9)	95 (2.0)
Malaysia			100 (0.0)	64 (4.3)	21 (3.2)
Moldova			66 (3.4)	55 (4.5)	62 (4.3)
Morocco			90 (2.2)	80 (2.9)	14 (2.6)
Netherlands	r	r	r 61 (6.2)	r 16 (5.2)	r 46 (6.5)
New Zealand			74 (3.7)	62 (4.2)	21 (3.5)
Philippines			89 (2.8)	65 (4.1)	37 (4.0)
Romania			86 (3.2)	73 (4.1)	79 (4.3)
Russian Federation			91 (1.7)	59 (2.8)	59 (4.1)
Singapore			44 (4.5)	51 (4.3)	41 (4.3)
Slovak Republic			90 (2.9)	81 (3.3)	65 (4.1)
Slovenia			94 (2.1)	35 (3.8)	42 (4.0)
South Africa			97 (1.2)	87 (2.4)	99 (0.8)
Thailand			76 (3.5)	69 (3.6)	48 (3.8)
Tunisia			71 (3.6)	55 (3.7)	21 (3.3)
Turkey			94 (2.3)	78 (3.2)	89 (2.4)
United States	r	r	r 94 (1.7)	r 55 (4.7)	r 68 (4.1)
I A			79 (0.5)	51 (0.6)	47 (0.6)

How Serious Are School Attendance Problems?

In some countries, schools are confronted with high rates of absenteeism, which can influence instructional continuity and reduce the time for learning. In general, research has shown that greater truancy is related to less serious attitudes towards school and lower academic achievement. To examine this issue, timss developed an index of good school and class attendance (sca) based on schools' responses to three questions about the seriousness of students' absenteeism, arriving late at school, and skipping class. The high index level indicates schools reported that all three behaviors are not a problem. The low level indicates that two or more are a serious problem, or two are minor problems and the third a serious problem. The medium category includes all other possible combinations of responses.

The results of the index are presented in Exhibit 7.5. Sixty percent of

Exhibit 7.5 Index of Good School and Class Attendance (SCA)

Index of Good School and Class Attendance

Index based on schools' responses to three questions about the seriousness of attendance problems in school: arriving late at school; absenteeism; skipping class (see exhibit 7.6). High level indicates that all three behaviors are reported to be not a problem. Low level indicates that two or more behaviors are reported to be a serious problem, or two behaviors are reported to be minor problems and the third a serious problem. Medium level includes all other possible combinations of responses.

	High SCA		Medium SCA		Low SCA	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Belgium (Flemish)	52 (4.4)	550 (5.2)	45 (4.5)	520 (6.6)	3 (1.0)	539 (10.1)
Slovenia	39 (4.0)	538 (5.6)	58 (4.0)	532 (3.7)	4 (1.7)	496 (17.5)
Jordan	39 (4.2)	464 (5.6)	56 (4.5)	444 (6.0)	5 (1.9)	423 (11.9)
Iran, Islamic Rep.	37 (4.9)	445 (7.9)	61 (4.9)	451 (4.2)	2 (1.3)	~ ~
Czech Republic	36 (5.8)	544 (6.7)	56 (6.0)	538 (5.6)	8 (2.3)	555 (17.7)
Italy	33 (3.3)	508 (5.0)	58 (3.6)	494 (5.4)	9 (2.4)	442 (14.3)
Singapore	32 (4.1)	599 (15.4)	64 (4.0)	553 (8.9)	3 (1.6)	552 (22.5)
Korea, Rep. of	31 (3.7)	547 (3.7)	61 (4.0)	549 (3.2)	9 (2.4)	557 (7.5)
Macedonia, Rep. of	31 (4.2)	452 (10.9)	51 (4.5)	465 (8.3)	19 (3.2)	446 (16.1)
Slovak Republic	31 (4.3)	535 (6.7)	57 (4.5)	538 (3.9)	12 (3.3)	510 (8.7)
Netherlands r	30 (7.3)	531 (10.2)	46 (7.3)	560 (6.2)	24 (7.5)	519 (28.3)
Chinese Taipei	28 (3.7)	591 (8.3)	61 (3.6)	558 (4.1)	11 (2.7)	576 (9.1)
Turkey	26 (3.1)	453 (7.9)	62 (3.9)	428 (4.8)	12 (2.8)	421 (10.1)
Hong Kong, SAR	25 (3.9)	540 (7.9)	68 (4.3)	531 (5.6)	7 (2.5)	500 (10.8)
Bulgaria	23 (5.7)	516 (8.9)	61 (5.4)	525 (8.0)	17 (3.1)	502 (11.3)
Hungary	23 (3.6)	565 (8.3)	60 (4.2)	552 (4.6)	17 (3.1)	536 (10.7)
United States r	19 (3.0)	553 (10.2)	68 (3.4)	512 (6.5)	13 (2.5)	480 (11.8)
Cyprus r	19 (0.1)	465 (5.8)	54 (0.2)	460 (4.0)	27 (0.2)	465 (3.8)
Canada	18 (2.2)	536 (5.7)	73 (3.0)	533 (2.5)	9 (2.0)	535 (11.8)
Thailand	17 (3.3)	481 (8.8)	68 (4.3)	485 (5.3)	14 (3.3)	488 (15.8)
Australia	17 (3.5)	559 (7.0)	70 (4.0)	542 (5.4)	13 (3.3)	506 (14.2)
Chile	16 (3.1)	440 (10.8)	70 (3.8)	418 (4.7)	13 (2.7)	413 (7.4)
Finland	15 (2.9)	532 (7.0)	67 (4.4)	536 (4.8)	18 (3.8)	535 (6.0)
Tunisia	15 (3.1)	439 (6.9)	60 (3.8)	429 (4.2)	26 (3.6)	427 (4.4)
New Zealand	15 (2.9)	531 (10.4)	69 (3.7)	515 (6.0)	16 (2.5)	461 (10.2)
Romania	15 (3.2)	483 (15.0)	55 (4.2)	463 (7.5)	31 (4.1)	480 (9.8)
Lithuania ‡	12 (2.6)	494 (12.3)	56 (4.2)	493 (5.7)	32 (3.7)	480 (6.3)
Latvia (LSS) r	11 (2.6)	497 (9.2)	63 (4.6)	504 (5.8)	26 (4.3)	499 (7.1)
Russian Federation	10 (1.7)	538 (16.1)	70 (3.8)	535 (7.4)	20 (3.4)	505 (8.5)
Indonesia	10 (2.6)	423 (14.7)	57 (4.5)	439 (6.7)	33 (4.1)	427 (7.4)
Philippines	8 (2.4)	350 (20.8)	72 (3.9)	352 (9.9)	20 (3.4)	322 (13.0)
Japan	7 (2.4)	560 (5.0)	47 (4.1)	551 (4.1)	46 (3.9)	546 (2.7)
Israel r	7 (2.3)	466 (15.1)	57 (4.8)	480 (6.2)	36 (4.6)	451 (12.4)
Malaysia	6 (2.4)	480 (18.4)	69 (4.1)	499 (5.4)	25 (3.8)	478 (8.6)
Morocco	4 (1.4)	325 (7.1)	56 (4.3)	320 (4.8)	40 (4.4)	327 (7.1)
South Africa	3 (1.2)	386 (44.1)	44 (3.9)	270 (15.4)	53 (4.0)	212 (9.7)
Moldova	1 (1.0)	~ ~	63 (3.8)	455 (5.6)	35 (3.8)	463 (8.8)
England	– –	– –	– –	– –	– –	– –
International Avg.	20 (0.6)	498 (2.5)	60 (0.7)	487 (1.0)	19 (0.5)	474 (2.0)

SOURCE: IEA Third International Mathematics and Science Study (TIMSS), 1998-1999.

‡ Lithuania tested the same cohort of students as other countries, but later in 1999, at the beginning of the next school year.

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

A dash (–) indicates data are not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates school response data available for 70-84% of students.


(SCA)
Belgium (Flemish)
Slovenia
Jordan
Iran, Islamic Rep.
Czech Republic
Italy
Singapore
Korea, Rep. of
Macedonia, Rep. of
Slovak Republic
Netherlands
Chinese Taipei
Turkey
Hong Kong, SAR
Bulgaria
Hungary
United States
Cyprus
Canada
Thailand
Australia
Chile
Finland
Tunisia
New Zealand
Romania
Lithuania
Latvia (LSS)
Russian Federation
Indonesia
Philippines
Japan
Israel
Malaysia
Morocco
South Africa
Moldova
England
0
20
40
60
80
100

Australia		77	(3.5)		6	(2.5)		63	(4.1)		11	(2.7)
Belgium (Flemish)		44	(4.7)		3	(1.4)		11	(2.4)		4	(1.8)
Bulgaria		34	(4.6)		11	(2.8)		26	(3.8)		18	(3.4)
Canada		58	(2.7)		7	(1.7)		45	(3.1)		7	(1.6)
Chile		62	(3.6)		17	(2.8)		40	(3.5)		8	(2.1)
Chinese Taipei		43	(4.1)		2	(1.1)		32	(4.0)		10	(2.7)
Cyprus		52	(0.2)	r	15	(0.2)		52	(0.2)	r	25	(0.2)
Czech Republic		21	(3.8)		0	(0.3)		9	(2.8)		8	(2.5)
England												
Finland		62	(3.8)		13	(3.4)		46	(4.0)		12	(3.0)
Hong Kong, SAR	r	61	(4.8)		9	(2.8)	r	34	(4.5)		3	(1.6)
Hungary		20	(3.4)		7	(2.2)		10	(2.5)		17	(3.0)
Indonesia		55	(4.6)		16	(3.0)		44	(4.8)		24	(3.4)
Iran, Islamic Rep.		29	(3.3)		4	(1.8)		11	(2.6)		5	(2.1)
Israel		74	(4.0)	r	30	(4.2)		53	(4.4)	r	24	(4.1)

Australia		50	(4.0)		4	(2.0)						
Belgium (Flemish)		4	(1.3)		2	(1.0)						
Bulgaria		16	(3.3)		8	(2.4)						
Canada		22	(2.3)		3	(1.0)						
Chile		11	(2.7)		5	(1.6)						
Chinese Taipei		30	(3.8)		11	(2.8)						
Cyprus		26	(0.2)	r	28	(0.2)						
Czech Republic		5	(2.2)		8	(2.4)						
England												
Finland		34	(4.3)		11	(3.1)						
Hong Kong, SAR	r	10	(2.8)	r	1	(0.9)						
Hungary		4	(1.7)		10	(2.3)						
Indonesia		29	(4.2)		32	(4.2)						
Iran, Islamic Rep.		3	(1.7)	r	3	(1.4)						
Israel		48	(4.7)	r	24	(4.1)		483	(3			

How Safe and Orderly Are Schools?

The frequency and seriousness of student behavior threatening an orderly school environment are presented in Exhibit 7.7. The three behaviors are violating the dress code, creating a classroom disturbance, and cheating. Violation of dress code is likely to reflect, at least partially, whether there is a uniform requirement. For many countries, violating the dress code was not reported to be a serious problem, and on average internationally only six percent of the students were in schools where it was a serious problem.

In contrast, 13 percent of the students, on average internationally, were in schools that reported classroom disturbances to be a serious problem. Most countries showed a pattern in which a larger percentage of students were in schools where classroom disturbances occurred at least weekly compared with the percentage of students in schools where it was considered a serious problem. The single exception was Japan, where just five percent of the students were in schools in which classroom disturbances occurred weekly, and yet 23 percent were in schools that considered classroom disturbances to be a serious problem.

The frequency and seriousness of student behavior threatening a safe school environment are shown in Exhibit 7.8. The five behaviors are vandalism, theft, physical injury to other students, intimidation or verbal abuse of other students, and intimidation or verbal abuse of teachers or staff. As in other reports of student behavior, cross-national comparisons are difficult because of differing perceptions of what constitutes a serious problem. However, with only a few exceptions, the overwhelming majority of students attend schools judged to have few serious problems. The incidence of these student behaviors was generally low in most countries. The exception was intimidation or verbal abuse of other students, for which several countries had relatively high percentages of students in schools where the behavior occurs at least weekly; in Australia, Israel, the Netherlands, and the United States, close to half of the students were in such schools.

	P S W S R B					
	V D C		C D			
	Occurs at Least Weekly	Is a Serious Problem	Occurs at Least Weekly	Is a Serious Problem	Occurs at Least Weekly	Is a Serious Problem
Australia		r	73 (4.2)	11 (2.8)	7 (2.6)	0 (0.0)
Belgium (Flemish)			40 (5.4)	7 (2.5)	14 (2.7)	1 (0.0)
Bulgaria			22 (3.8)	6 (1.9)	3 (1.5)	0 (0.4)
Canada			60 (2.6)	21 (2.3)	4 (1.4)	2 (0.9)
Chile			46 (3.6)	15 (2.7)	13 (2.8)	2 (1.0)
Chinese Taipei			30 (3.8)	4 (1.6)	9 (2.1)	8 (2.3)
Cyprus		r	r 55 (0.2)	r 25 (0.2)	4 (0.1)	r 15 (0.2)
Czech Republic			63 (4.7)	21 (4.4)	9 (4.3)	11 (3.5)
England						
Finland			50 (3.9)	6 (2.1)	0 (0.4)	0 (0.4)
Hong Kong, SAR	r	r	36 (4.7)	r 9 (2.9)	4 (1.7)	r 4 (1.9)
Hungary			41 (4.2)	15 (2.4)	2 (1.1)	16 (2.9)
Indonesia			21 (3.4)	12 (3.0)	12 (2.7)	15 (2.9)
Iran, Islamic Rep.			21 (3.4)	5 (1.9)	0 (0.0)	4 (1.3)
Israel		r	61 (4.5)	r 35 (4.9)	6 (2.1)	r 5 (2.2)
Italy			47 (4.0)	32 (3.6)	13 (2.7)	5 (1.4)
Japan			5 (1.5)	23 (3.7)	2 (1.1)	13 (2.8)
Jordan		r	28 (3.7)	r 5 (2.2)	5 (2.0)	r 6 (2.1)
Korea, Rep. of			43 (4.2)	7 (1.8)	3 (1.3)	8 (2.5)
Latvia (LSS)	s	r	37 (4.5)	17 (3.8)	53 (5.0)	r 18 (3.9)
Lithuania			18 (2.8)	12 (2.4)	7 (2.1)	6 (2.0)
Macedonia, Rep. of			13 (2.3)	5 (2.0)	8 (1.9)	2 (0.7)
Malaysia			26 (3.7)	8 (2.3)	10 (2.4)	7 (1.8)
Moldova			29 (3.7)	13 (2.7)	19 (3.2)	14 (3.3)
Morocco			32 (3.8)	28 (3.2)	9 (2.0)	28 (3.1)
Netherlands	r	r	r 76 (5.5)	r 14 (5.4)	r 60 (6.5)	r 1 (0.8)
New Zealand			68 (3.8)	9 (2.5)	6 (2.0)	0 (0.0)
Philippines			27 (3.7)	4 (1.7)	13 (3.1)	2 (1.3)
Romania			17 (3.3)	14 (3.0)	0 (0.0)	10 (2.6)
Russian Federation			13 (2.8)	4 (1.6)	1 (0.5)	2 (1.2)
Singapore			32 (3.9)	3 (1.7)	3 (1.4)	0 (0.0)
Slovak Republic			60 (4.4)	21 (4.1)	51 (4.1)	4 (1.8)
Slovenia			61 (4.3)	9 (2.5)	4 (1.7)	0 (0.4)
South Africa		r	39 (4.1)	15 (3.3)	21 (3.6)	13 (2.3)
Thailand			13 (2.6)	3 (1.4)	3 (1.5)	r 2 (1.2)
Tunisia			545)	20 (3.2)	2 (1.4)	38 (4.2)
Turkey			272714 (15)-468.6( )	10 (2.8)	5 (1.6)	4 (1.8)
United States	r	r	r	r 11 (2.6)	r 12 (2.8)	r 1 (0.0)
I A				13 (0.5)	11 (0.4)	7 (0.3)

Exhibit 7.8 Overleaf

Australia	27 (4.2)	2 (1.2)	23 (3.7)	1 (0.7)	14 (3.1)	3 (1.4)
Belgium (Flemish)	8 (2.4)	9 (2.6)	7 (2.2)	9 (2.5)	8 (1.9)	6 (2.1)
Bulgaria	5 (1.8)	4 (1.6)	1 (0.6)	1 (1.0)	4 (1.4)	1 (0.0)
Canada	15 (1.5)	6 (2.0)	7 (1.4)	6 (1.9)	6 (1.8)	4 (1.5)
Chile	9 (2.3)	7 (2.0)	10 (2.3)	7 (1.9)	12 (2.5)	9 (1.8)
Chinese Taipei	14 (3.1)	11 (2.5)	7 (2.2)	16 (2.9)	8 (2.3)	21 (3.2)
Cyprus	r 18 (0.1)	r 22 (0.2)	r 8 (0.1)	r 23 (0.2)	2 (0.0)	r 20 (0.2)
Czech Republic	13 (2.7)	21 (3.6)	3 (1.9)	17 (3.8)	2 (1.7)	17 (3.7)
England						
Finland	6 (2.2)	3 (1.6)	3 (1.8)	1 (0.8)	7 (2.5)	2 (1.4)
Hong Kong, SAR	18 (3.7)	r 6 (2.3)	8 (2.6)	r 5 (2.2)	5 (2.1)	r 3 (1.6)
Hungary	10 (2.6)	30 (3.5)	2 (1.1)	25 (3.4)	8 (2.0)	23 (3.1)
Indonesia	4 (1.8)	29 (4.0)	1 (0.9)	30 (4.1)	0 (0.0)	26 (3.9)
Iran, Islamic Rep.	3 (1.4)	r 4 (1.6)	1 (0.6)	4 (1.6)	3 (1.4)	r 2 (1.4)
Israel	30 (4.2)	r 28 (4.1)	10 (2.9)	r 15 (3.5)	24 (4.3)	r 18 (3.7)
Italy	7 (1.9)	18 (2.8)	4 (1.4)	16 (2.8)	9 (2.1)	19 (3.0)
Japan	3 (1.3)	23 (3.5)	1 (0.9)	25 (3.7)	1 (0.9)	22 (3.6)
Jordan	5 (1.8)	r 16 (3.6)	2 (1.1)	r 12 (3.1)	9 (2.5)	r 10 (2.7)
Korea, Rep. of	12 (2.8)	10 (2.5)	9 (2.5)	13 (3.0)	10 (2.6)	9 (2.6)
Latvia (LSS)	2 (1.3)	r 4 (2.0)	0 (0.0)	10 (3.0)	5 (2.3)	r 8 (2.6)
Lithuania	0 (0.0)	6 (1.7)	0 (0.0)	9 (2.0)	1 (0.0)	7 (1.3)

Australia		51	(4.0)		11	(3.1)	16	(3.2)		5	(1.8)
Belgium (Flemish)		23	(3.4)		15	(3.7)	5	(1.5)		3	(1.2)
Bulgaria		9	(2.3)		2	(0.9)	1	(0.6)		0	(0.4)
Canada		42	(3.0)		22	(2.5)	4	(1.2)		3	(1.1)
Chile		23	(3.3)		14	(2.4)	4	(1.5)		7	(2.0)
Chinese Taipei		11	(2.7)		18	(3.1)	1	(1.0)		17	(3.0)
Cyprus	r	23	(0.2)	r	20	(0.2)	3	(0.1)	r	25	(0.2)
Czech Republic		5	(1.5)		17	(3.6)	0	(0.0)		9	(2.6)
England											
Finland		14	(3.2)		7	(2.2)	4	(1.4)		2	(1.1)
Hong Kong, SAR	r	8	(2.7)	r	4	(1.8)	r	3	(1.5)	r	2	(1.3)
Hungary		9	(2.5)		25	(3.6)	1	(0.6)		8	(1.9)
Indonesia		2	(1.3)		25	(3.9)	0	(0.0)		28	(3.8)
Iran, Islamic Rep.		11	(2.9)		2	(1.5)	2	(1.2)	r	4	(1.8)
Israel		51	(4.6)	r	32	(5.1)	8	(2.6)	r	14	(3.6)
Italy		14	(2.3)		23	(3.0)	4	(1.7)		13	(2.7)
Japan		3	(1.5)		25	(3.8)	2	(1.2)		23	(3.7)
Jordan		18	(3.0)	r	8	(2.4)	1	(0.8)	r	11	(2.9)
Korea, Rep. of		12	(2.9)		12	(2.8)	8	(2.3)		9	(2.5)
Latvia (LSS)		1	(1.1)	r	5	(2.1)	0	(0.0)	r	1	(0.6)
Lithuania		3	(1.4)		14	(2.2)	0	(0.0)		6	(1.4)
Macedonia, Rep. of		6	(1.8)		7	(2.0)	1	(0.0)		5	(2.0)
Malaysia		4	(1.7)		11	(2.3)	1	(0.9)		8	(2.1)
Moldova		3	(1.4)		5	(1.9)	1	(0.0)		4	(1.7)
Morocco		18	(3.0)		22	(3.1)	10	(2.4)		32	(3.7)