

Exhibit 5.6: Schools with Computers Available for Instruction

Exhibit 5.6 shows principals' reports about the availability of computers for reading instruction. On average, the majority of the fourth grade students (51%) were in schools that had 1 computer for 1 to 2 students, 23 percent in schools with 1 computer for 3 to 5 students, 19 percent in schools with 1 computer for 6 or more students, and 7 percent in schools with no computers available for instruction. The relationship between computer availability and average reading achievement is difficult to interpret because it is highly interrelated with socioeconomic levels and instructional practices. In the primary grades, computer instruction often is used for remedial purposes. The results show that those students in schools with no computers had lower achievement than the students in schools with computer availability.

Exhibit 5.6: Schools with Computers Available for Instruction

Students Categorized by Principals' Reports

Country	1–2 Students per Computer		3–5 Students per Computer		6 or More Students per Computer		No Computers Available	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Australia	84 (2.9)	545 (3.1)	13 (2.6)	544 (7.6)	3 (1.3)	539 (4.5)	0 (0.0)	~ ~
Austria	18 (3.2)	541 (4.4)	22 (3.8)	550 (4.5)	58 (3.8)	536 (3.4)	1 (0.7)	~ ~
Azerbaijan	22 (3.4)	461 (8.1)	35 (4.6)	469 (7.6)	31 (3.8)	496 (4.4)	12 (2.9)	422 (19.5)
Bahrain	42 (3.1)	451 (3.9)	34 (2.6)	431 (4.2)	24 (2.0)	460 (7.2)	0 (0.2)	~ ~
Belgium (Flemish)	r 51 (3.6)	529 (2.5)	36 (3.9)	527 (4.1)	12 (2.9)	506 (6.7)	0 (0.0)	~ ~
Belgium (French)	34 (3.9)	496 (4.5)	36 (4.8)	500 (4.4)	16 (3.3)	506 (9.4)	15 (3.2)	489 (7.6)
Bulgaria	39 (3.4)	529 (6.4)	37 (3.7)	568 (6.4)	21 (3.2)	551 (11.8)	4 (1.6)	574 (10.2)
Canada	85 (1.7)	543 (2.1)	13 (1.5)	548 (4.3)	2 (0.7)	~ ~	0 (0.0)	~ ~
Chile	74 (4.1)	489 (3.3)	20 (4.1)	508 (7.3)	5 (1.7)	494 (13.3)	1 (0.9)	~ ~
Chinese Taipei	38 (3.2)	554 (3.7)	39 (3.7)	560 (3.0)	21 (3.0)	565 (3.1)	1 (1.0)	~ ~
Czech Republic	84 (3.1)	541 (2.4)	12 (2.8)	550 (4.7)	3 (1.3)	566 (9.1)	1 (0.8)	~ ~
Denmark	90 (2.5)	548 (2.3)	8 (2.1)	554 (10.7)	2 (1.3)	~ ~	1 (0.5)	~ ~
Egypt	r 3 (1.5)	294 (72.8)	6 (2.1)	421 (17.3)	85 (3.3)	322 (6.4)	7 (2.5)	355 (28.7)
England	86 (2.3)	559 (2.2)	10 (1.7)	561 (6.9)	4 (1.5)	564 (11.0)	0 (0.5)	~ ~
Finland	75 (3.5)	566 (2.1)	17 (2.9)	565 (4.8)	8 (2.4)	567 (7.5)	0 (0.0)	~ ~
France	40 (4.2)	514 (4.4)	41 (4.3)	512 (3.7)	13 (2.7)	502 (5.6)	6 (1.9)	508 (7.7)
Georgia	83 (3.1)	488 (3.2)	11 (2.7)	483 (8.3)	5 (1.8)	521 (9.6)	1 (0.7)	~ ~
Germany	35 (3.7)	535 (5.5)	38 (4.0)	541 (3.7)	26 (3.3)	537 (10.1)	1 (0.7)	~ ~
Hong Kong SAR	77 (4.2)	569 (3.5)	20 (4.1)	571 (5.3)	2 (1.2)	~ ~	1 (0.8)	~ ~
Hungary	46 (3.7)	535 (4.9)	26 (3.6)	572 (5.7)	17 (3.1)	569 (6.8)	11 (3.0)	561 (9.9)
Iran, Islamic Rep. of	1 (0.7)	~ ~	3 (1.1)	385 (86.8)	44 (3.9)	445 (5.9)	52 (3.8)	416 (6.3)
Ireland	57 (4.6)	569 (3.1)	19 (3.6)	561 (6.7)	24 (4.2)	565 (5.9)	0 (0.0)	~ ~
Israel	40 (3.8)	535 (6.2)	41 (4.1)	536 (6.5)	14 (2.9)	515 (13.0)	6 (2.1)	506 (21.3)
Italy	20 (3.2)	554 (5.4)	37 (4.1)	548 (4.2)	39 (3.8)	545 (3.5)	4 (1.7)	554 (8.7)
Kazakhstan	39 (3.7)	537 (4.1)	19 (3.3)	530 (6.3)	33 (3.7)	540 (5.6)	9 (2.5)	518 (10.1)
Kuwait	r 34 (5.1)	386 (11.7)	35 (4.0)	382 (7.1)	26 (4.8)	397 (9.8)	6 (3.0)	434 (39.2)
Latvia	49 (3.6)	546 (2.6)	29 (4.6)	569 (3.4)	20 (3.4)	566 (5.0)	3 (1.5)	573 (18.1)
Lithuania	47 (3.7)	540 (4.6)	25 (3.5)	548 (4.9)	26 (3.8)	560 (4.8)	2 (1.2)	~ ~
Macao SAR	82 (0.1)	547 (1.2)	14 (0.1)	526 (3.5)	0 (0.0)	~ ~	4 (0.0)	582 (2.9)
Malta	18 (0.1)	452 (3.7)	67 (0.1)	451 (2.1)	14 (0.1)	455 (3.1)	1 (0.0)	~ ~
Morocco	5 (1.3)	458 (16.8)	6 (1.3)	422 (14.5)	22 (3.1)	374 (10.0)	67 (2.9)	339 (5.1)
Netherlands	r 65 (4.7)	547 (2.6)	17 (3.6)	544 (8.2)	17 (3.5)	543 (5.7)	1 (0.8)	~ ~
New Zealand	78 (3.7)	524 (3.4)	20 (3.4)	531 (5.8)	2 (1.2)	~ ~	0 (0.0)	~ ~
Northern Ireland	r 82 (4.5)	562 (3.1)	10 (3.4)	574 (12.8)	8 (3.6)	582 (7.9)	0 (0.0)	~ ~
Norway (5)	79 (3.6)	558 (2.6)	16 (3.5)	565 (5.7)	4 (1.6)	555 (8.1)	1 (0.7)	~ ~
Oman	25 (2.2)	422 (8.9)	20 (2.5)	420 (5.6)	50 (2.9)	425 (4.5)	5 (1.5)	399 (6.5)
Poland	68 (3.9)	563 (3.0)	26 (3.7)	571 (3.5)	6 (2.0)	581 (11.0)	0 (0.0)	~ ~
Portugal	11 (1.9)	532 (6.4)	31 (4.2)	532 (3.2)	55 (4.1)	523 (3.8)	3 (1.3)	552 (7.7)
Qatar	52 (0.4)	431 (2.4)	24 (0.3)	445 (4.9)	23 (0.4)	479 (4.3)	0 (0.0)	~ ~
Russian Federation	48 (3.3)	582 (4.3)	31 (2.7)	586 (4.0)	19 (2.8)	571 (5.7)	2 (0.9)	~ ~
Saudi Arabia	12 (2.3)	435 (11.1)	10 (2.6)	430 (13.8)	45 (3.3)	423 (6.8)	33 (3.4)	448 (7.9)
Singapore	87 (0.0)	578 (3.4)	11 (0.0)	558 (11.7)	2 (0.0)	~ ~	0 (0.0)	~ ~
Slovak Republic	88 (3.0)	535 (3.3)	10 (2.7)	539 (17.9)	2 (1.3)	~ ~	0 (0.1)	~ ~
Slovenia	63 (4.2)	541 (2.6)	29 (3.8)	546 (3.6)	7 (2.6)	537 (6.6)	1 (0.8)	~ ~
South Africa	s 11 (3.1)	365 (28.7)	19 (2.9)	375 (14.3)	13 (2.6)	306 (17.1)	57 (4.3)	305 (6.0)
Spain	59 (3.0)	525 (2.5)	26 (2.9)	532 (3.0)	11 (1.8)	525 (5.4)	4 (1.4)	528 (8.8)
Sweden	84 (3.6)	555 (3.0)	13 (3.4)	554 (5.6)	3 (1.5)	544 (10.5)	0 (0.0)	~ ~
Trinidad and Tobago	r 10 (2.4)	491 (10.3)	25 (4.0)	491 (9.0)	20 (3.6)	507 (8.9)	46 (4.1)	470 (6.1)
United Arab Emirates	38 (2.1)	452 (5.3)	35 (2.5)	436 (6.1)	27 (2.3)	471 (7.2)	1 (0.0)	~ ~
United States	89 (2.7)	551 (3.0)	9 (2.5)	538 (15.4)	2 (1.1)	~ ~	0 (0.0)	~ ~
International Avg.	51 (0.5)	514 (1.8)	23 (0.5)	515 (2.1)	19 (0.4)	508 (1.2)	7 (0.2)	477 (3.3)

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

() 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. An "s" indicates data are available for at least 50% but less than 70% of the students.

Exhibit 5.6: Schools with Computers Available for Instruction (Continued)

Country	1–2 Students per Computer		3–5 Students per Computer		6 or More Students per Computer		No Computers Available	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Benchmarking Participants								
Buenos Aires, Argentina	59 (4.2)	474 (4.8)	27 (3.8)	490 (7.3)	14 (3.0)	496 (13.5)	0 (0.0)	~ ~
Ontario, Canada	89 (3.3)	546 (3.5)	9 (3.1)	543 (10.5)	2 (1.2)	~ ~	0 (0.0)	~ ~
Quebec, Canada	67 (5.0)	549 (4.4)	27 (4.3)	548 (5.0)	6 (2.4)	538 (10.5)	0 (0.0)	~ ~
Denmark (3)	86 (3.0)	501 (3.0)	11 (2.5)	504 (9.8)	3 (1.8)	501 (20.1)	1 (0.5)	~ ~
Norway (4)	74 (3.9)	517 (2.2)	20 (3.4)	520 (5.3)	6 (2.1)	515 (7.3)	1 (0.7)	~ ~
Moscow City, Russian Fed.	78 (3.7)	611 (2.4)	19 (3.5)	613 (4.5)	3 (1.5)	607 (16.6)	0 (0.0)	~ ~
Eng/Afr/Zulu - RSA (5)	11 (3.3)	451 (29.3)	32 (5.3)	437 (14.4)	14 (3.2)	363 (19.0)	43 (5.5)	400 (11.9)
Andalusia, Spain	55 (4.2)	522 (3.2)	20 (3.8)	531 (5.1)	14 (3.3)	526 (5.2)	10 (2.5)	524 (5.3)
Madrid, Spain	37 (3.6)	550 (4.1)	48 (3.5)	550 (2.9)	15 (2.5)	544 (4.1)	1 (0.7)	~ ~
Abu Dhabi, UAE	47 (3.7)	417 (8.8)	36 (3.8)	409 (9.6)	16 (2.6)	419 (14.8)	2 (0.1)	~ ~
Dubai, UAE	44 (0.3)	515 (2.4)	26 (0.3)	503 (3.6)	30 (0.2)	533 (4.3)	0 (0.0)	~ ~

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

$$\text{School Student-to-Computer Ratio} = \frac{\text{School Enrollment of Fourth Grade Students}}{\text{Number of Computers or Tablets Available for Use by Fourth Grade Students}}$$