

Exhibit M10.1: Students' Views on Engaging Teaching in Advanced Mathematics Lessons

Reported by Advanced Mathematics Students

Students were scored according to their degree of agreement with fourteen statements on the *Students' Views on Engaging Teaching in Advanced Mathematics Lessons* scale. Students who experienced **Very Engaging Teaching** in advanced mathematics lessons had a score on the scale of at least 10.4, which corresponds to their "agreeing a lot" with seven of the fourteen statements and "agreeing a little" with the other seven, on average. Students who experienced teaching that was **Less than Engaging Teaching** had a score no higher than 7.9, which corresponds to their "disagreeing a little" with seven of the fourteen statements and "agreeing a little" with the other seven, on average. All other students experienced **Engaging Teaching** in advanced mathematics lessons.

Country	Very Engaging Teaching		Engaging Teaching		Less than Engaging Teaching		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Lebanon	67 (1.9)	539 (3.3)	28 (1.7)	519 (5.0)	5 (0.6)	525 (13.0)	11.2 (0.08)
Russian Federation 6hr+	60 (2.3)	553 (8.4)	35 (2.0)	523 (8.8)	4 (0.6)	499 (12.4)	10.9 (0.11)
Russian Federation	54 (2.1)	509 (6.2)	38 (1.5)	464 (5.9)	7 (0.9)	413 (12.9)	10.6 (0.09)
United States	54 (1.8)	503 (5.9)	35 (1.4)	473 (8.4)	11 (1.1)	446 (10.5)	10.5 (0.09)
Norway	44 (2.3)	477 (4.9)	47 (1.3)	450 (4.5)	9 (1.2)	422 (6.7)	10.1 (0.09)
Portugal	42 (1.8)	498 (2.9)	44 (1.4)	480 (2.7)	14 (1.3)	446 (5.4)	10.1 (0.09)
France	35 (1.5)	481 (3.5)	57 (1.3)	458 (3.3)	9 (0.8)	421 (5.9)	9.9 (0.06)
Sweden	27 (1.6)	471 (5.0)	51 (1.3)	428 (4.2)	22 (1.6)	391 (6.2)	9.4 (0.09)
Italy	25 (1.4)	429 (8.0)	52 (1.2)	427 (6.3)	24 (1.8)	403 (7.4)	9.2 (0.09)
Slovenia	18 (1.0)	500 (6.4)	57 (1.5)	464 (3.9)	25 (1.6)	425 (3.6)	9.0 (0.05)
International Avg.	41 (0.6)	490 (1.8)	45 (0.5)	463 (1.7)	14 (0.4)	432 (2.9)	

The Russian Federation 6hr+ results are for a subset of the Russian Federation students. This subset of students are in an Intensive stream that have at least 6 hours of mathematics lessons per week.

This TIMSS Advanced questionnaire scale was established in 2015 based on the combined response distribution of all countries that participated in TIMSS Advanced 2015. To provide a point of reference for country comparisons, the scale centerpoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

How much do you agree with these statements about your advanced mathematics lessons?

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
1) The teacher clearly communicates the purpose of each mathematics lesson	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) I know what my teacher expects me to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) My teacher is easy to understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) I am interested in what my teacher says	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) My teacher gives me interesting things to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) My teacher asks me thought provoking questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) My teacher has clear answers to my questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) My teacher links new content to what I already know	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9) My teacher is good at explaining advanced mathematics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10) My teacher provides the opportunity for me to show what I have learned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11) My teacher encourages me to keep working on advanced mathematics problems until I solve them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12) My teacher provides helpful feedback on my schoolwork (including homework)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13) My teacher uses a variety of teaching methods, tasks, and activities to help us learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14) My teacher believes that I can learn difficult advanced mathematics material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Very Engaging Teaching 10.4 Engaging Teaching Less than Engaging Teaching 7.9

Exhibit M10.1: Students' Views on Engaging Teaching in Advanced Mathematics Lessons (Continued)

Students' Views on Engaging Teaching in Advanced Mathematics Lessons by Gender

Reported by Advanced Mathematics Students

Country	Very Engaging Teaching		Engaging Teaching		Less than Engaging Teaching	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Lebanon						
Females	69 (3.4)	539 (5.2)	28 (3.4)	523 (8.5)	4 (0.9)	492 (21.0)
Males	66 (2.0)	538 (4.4)	28 (1.9)	517 (6.2)	5 (0.9)	538 (14.5)
Russian Federation 6hr+						
Females	61 (2.7)	543 (9.9)	35 (2.3)	512 (9.7)	5 (0.9)	482 (17.1)
Males	60 (2.5)	562 (8.1)	36 (2.3)	532 (9.8)	4 (0.6)	515 (13.2)
Russian Federation						
Females	54 (2.9)	503 (7.0)	39 (2.2)	460 (7.0)	7 (1.1)	409 (13.2)
Males	54 (1.9)	514 (6.8)	38 (1.5)	469 (6.5)	8 (0.9)	416 (15.3)
United States						
Females	55 (1.7)	486 (7.1)	34 (1.4)	459 (6.7)	12 (1.2)	428 (12.3)
Males	53 (2.7)	519 (6.0)	37 (2.6)	485 (13.8)	10 (1.3)	465 (13.1)
Norway						
Females	42 (2.9)	471 (5.2)	47 (2.2)	448 (6.0)	11 (1.5)	411 (8.9)
Males	45 (2.4)	480 (5.7)	47 (1.5)	452 (5.4)	8 (1.4)	432 (8.0)
Portugal						
Females	45 (2.2)	496 (3.5)	43 (1.7)	474 (3.8)	12 (1.5)	454 (5.7)
Males	39 (1.9)	499 (4.0)	45 (1.7)	486 (3.2)	16 (1.5)	439 (8.3)
France						
Females	36 (1.9)	465 (3.8)	55 (1.7)	443 (3.5)	9 (1.0)	416 (7.1)
Males	33 (1.7)	496 (4.3)	58 (1.5)	471 (3.8)	8 (1.0)	425 (7.4)
Sweden						
Females	26 (1.9)	466 (5.9)	50 (2.0)	423 (6.0)	24 (2.0)	382 (8.2)
Males	27 (1.9)	474 (6.4)	53 (1.5)	431 (4.2)	20 (1.6)	399 (7.1)
Italy						
Females	25 (1.9)	434 (13.5)	50 (1.8)	431 (6.6)	26 (2.2)	414 (7.9)
Males	25 (1.7)	426 (8.7)	53 (1.3)	425 (7.9)	22 (1.9)	395 (9.2)
Slovenia						
Females	16 (1.1)	485 (6.6)	57 (1.7)	454 (4.3)	27 (2.0)	420 (4.0)
Males	22 (1.5)	516 (8.8)	57 (1.9)	478 (5.2)	21 (1.9)	435 (6.3)
International Avg.						
Females	41 (0.8)	483 (2.3)	44 (0.7)	457 (2.0)	15 (0.5)	425 (3.6)
Males	41 (0.7)	496 (2.1)	46 (0.6)	468 (2.3)	13 (0.5)	438 (3.5)

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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