

		pre-test %	post-test %	Difference	Difference squared		
2018-19	Teacher A	Student 1	10	95	85	7225	
		Student 5	10	24	14	196	
	Teacher B	Student 7	10	80	70	4900	
		Student 8	20	10	-10	100	
		Student 9	10	70	60	3600	
		Student 10	30	80	50	2500	
		Student 11	10	80	70	4900	
		Student 12	10	60	50	2500	
		Student 13	30	10	-20	400	
		Student 14	10	80	70	4900	
		Student 16	10	90	80	6400	
		Student 17	10	60	50	2500	
		Student 18	10	80	70	4900	
		Student 19	10	80	70	4900	
		Teacher C	Student 20	31	36	5	25
	Student 21		67	75	8	64	
	Student 22		39	44	5	25	
	Student 23		69	89	20	400	
	Student 24		56	64	8	64	
	Student 26		53	72	19	361	
	Student 27		61	72	11	121	
	Student 28		6	33	27	729	
	Student 30		6	8	2	4	
	Student 31		44	64	20	400	
	Student 32		25	33	8	64	
	Student 33	6	11	5	25		
	Student 34	22	39	17	289		
	Student 35	6	44	38	1444		
	Student 36	19	25	6	36		
	Student 37	14	50	36	1296		
	2019-20	TeacherA	1	10.52	74.00	63.48	4029.7104
			3	63.16	89.00	25.84	667.7056
			4	0.05	58.00	57.95	3358.2025
			5	21.05	68.00	46.95	2204.3025
			6	15.79	100.00	84.21	7091.3241
			7	0.05	53.00	52.95	2803.7025
			8	10.52	74.00	63.48	4029.7104
9			10.52	79.00	68.48	4689.5104	
11			21.05	100.00	78.95	6233.1025	
12			0.05	89.00	88.95	7912.1025	
13			47.37	84.00	36.63	1341.7569	
14			15.79	68.00	52.21	2725.8841	
15			15.79	79.00	63.21	3995.5041	
TeacherB			1	50.00	25.00	-25	625
			3	25.00	75.00	50	2500
		4	50.00	50.00	0	0	
		5	50.00	25.00	-25	625	
		7	50.00	50.00	0	0	
		9	50.00	0.00	-50	2500	
10		75.00	50.00	-25	625		
11		75.00	0.00	-75	5625		

		12	50.00	75.00	25	625
		14	25.00	25.00	0	0
		15	50.00	100.00	50	2500
		16	25.00	100.00	75	5625
		17	50.00	75.00	25	625
		18	25.00	0.00	-25	625
		19	25.00	75.00	50	2500
		20	50.00	75.00	25	625
		21	25.00	0.00	-25	625
		22	50.00	50.00	0	0
		23	25.00	25.00	0	0
		24	75.00	25.00	-50	2500
		25	75.00	100.00	25	625
2020-21	TeacherA	1	100.00	100.00	0	0
		2	80.00	33.00	-47	2209
		3	13.00	60.00	47	2209
		5	73.00	93.00	20	400
		6	47.00	67.00	20	400
		7	73.00	87.00	14	196
		8	86.00	93.00	7	49
		9	73.00	97.00	24	576
		10	93.00	100.00	7	49
		11	8.00	93.00	85	7225
2022-23	TeacherA	1	60	60	0	0
		2	87	100	13	169
		3	63	50	-13	169
		4	27	87	60	3600
		5	60	83	23	529
		6	57	83	26	676
		7	67	77	10	100
		8	87	80	-7	49
		9	70	83	13	169
		10	60	40	-20	400
		12	80	80	0	0
		13	37	37	0	0
		14	63	83	20	400
		15	47	100	53	2809
		16	37	30	-7	49
		18	73	93	20	400
		19	33	73	40	1600
2023-24	TeacherA	1	66	83	17	289
		2	28	61	33	1089
		3	33	61	28	784
		4	44	83	39	1521
		5	17	89	72	5184
		6	44	67	23	529
		7	44	67	23	529
		8	39	72	33	1089
		9	33	100	67	4489
		10	17	67	50	2500
		11	28	83	55	3025
		12	44	33	-11	121
		13	33	56	23	529

	14	22	89	67	4489
	15	17	78	61	3721
	16	39	83	44	1936
TeacherB	1	11.11	100.00	88.89	7901.4321
	2	33.33	83.33	50	2500
	3	44.44	77.78	33.34	1111.5556
	6	33.33	94.44	61.11	3734.4321
	7	33.33	88.89	55.56	3086.9136
	8	33.33	94.44	61.11	3734.4321
	9	22.22	83.33	61.11	3734.4321
	10	11.11	44.44	33.33	1110.8889
	11	33.33	100.00	66.67	4444.8889
	12	33.33	100.00	66.67	4444.8889
	13	11.11	88.89	77.78	6049.7284
	15	33.33	100.00	66.67	4444.8889
	16	22.22	94.44	72.22	5215.7284
	totals			3578.75	243495.7285

Cumulative N	120
Mean Difference	29.82291667
St Deviation of Differences	33.75980913
St Error of Differences	3.081834833
t-score	9.677000321

Critical Values of t (two-tailed test)

degrees of freedom (N-1)	Significant at 0.05	Significant at 0.01	population t-score	Statically significant?
100	1.98	2.63		
134	1.98	2.62	9.677000321	yes at both 0.05 and 0.01 levels
200	1.97	2.6		

* degrees of freedom equal n-1; use entries in t-test chart closest to n-1 and interpolate (if necessary)
statistically significant if t score is greater than or equal to interpolated value

NOTE: Starting with 2022-23, students with 0% on pretest are not used in the data analysis. Need to have study participants indicate if students scored a zero or simply did not take the pre-assessment.