

Phase4: Discussion

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A student's achievement is crucial to a school's education and standing. A better understanding of what trends contribute to a student's achievement may help us improve their situations in which they may achieve more. As a result, we investigate potential factors that may affect students' achievement based on the Ontario Elementary and Secondary School's Database. We get the following results: (Each investigation refers to Q1, Q2, and Q3, respectively)

We first investigate whether natural talent affects students' achievement, and get the following tables.
Elementary Schools:

Talent	reading	readingchange	writing	writingchange	math	mathchange	numschool
high	0.65	1.15	0.60	-4.79	0.46	- 5.06	327
low	0.78	0.44	0.73	-3.44	0.63	-3.58	1561

Secondary Schools:

Talent	math	mathchange	appliedmath	appliedmathchange	osslt	ossltchange	numschool
high	0.78	-0.15	0.45	0.85	0.74	-2.17	323
low	0.88	0.90	0.43	-2.69	0.90	0.42	73

The result is surprising that schools with more low talent students have greater achievement than those with more high talent students. Such a surprise may be because low talent students are always more hardworking than high talent students. However, there is one exception in applied math where schools with more high talent students have greater achievement. The exception may imply that applied math needs students to be more talented.

Then, we investigate whether household income affects students' achievement, and get the following tables.
Elementary Schools:

Secondary Schools:

Income	reading	writing	math	Income	math	appliedmath	ossalt
lowIncome < 15%	0.79	0.74	0.64	lowIncome < 15%	0.84	0.50	0.80
lowIncome > 30%	0.64	0.60	0.45	lowIncome > 30%	0.69	0.32	0.69

From the above tables, we learn that students from poor families have less achievement and those from rich families have higher achievement on average. The result may imply that schools with fewer students from low-income families have better education resources and are usually more expensive. The unequal distribution of education resources is still a problem in Ontario.

Finally, we investigate whether the multicultural environment affects students' achievement, and get the following tables. (multi-culture is measured by how many percentages of students are non-English speakers)
Elementary Schools:

language	reading	readingchange	writing	writingchange	math	mathchange	numschool
English	0.71	1.91	0.65	-3.71	0.54	-3.33	732
multilanguage	0.76	0.61	0.71	-3.48	0.61	-4.03	942

Secondary Schools:

language	math	mathchange	appliedmath	appliedmathchange	osslt	ossltchange	num
English	0.79	1.05	0.48	0.27	0.71	-3.75	177
multilanguage	0.83	0.17	0.41	-0.28	0.83	0.28	248

The result shows that schools with a multi-language environment have slightly better student achievement. There is no significant gap between them except for osslt test. 10 more percentage of students pass osslt test in the schools with a multi-language environment. Such a difference may imply that a multicultural environment can broaden students' perspectives, and thus improve their osslt's grades.