

Mathematician devises a means for tying impact of teaching quality to pupil's future earnings

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Credit: Anna Frodesiak/Wikipedia

(Phys.org) —Harvard economist and mathematician Gary Chamberlain has devised a means to tie a student's future earnings with the quality of teaching they had in middle and grade school. In his paper published in *Proceedings of the National Academy of Sciences*, Chamberlain describes a study he undertook that he says shows that the quality of a teacher a child has can have an impact not only on his or her test scores, but

earnings up to a decade later.

Prior work by Chamberlain and others has found a link between the quality of a teacher and test scores by that teacher's students even after they have moved on to other [teachers](#). In this latest effort, he looked to take the idea even further, to see if having a good teacher can mean increased earnings as an adult.

To find out, Chamberlain obtained student data from over 800 schools in the United States, spanning the years 1988 to 2009 for grades four through eight. The data included information regarding teacher/student assignments and test scores. For those that had graduated, he obtained data that told him which of the students attended college. For some, he even managed to obtain pay rates later on in life. Crunching all the data allowed him to gain a new perspective on achievements of students based on the quality of teacher they had during their formative years.

Chamberlain reports that he found that simply having certain teachers led to a greater chance of attending college for some students, and because of that, they had higher earnings later in life. More specifically, he found higher test scores resulted in a greater likelihood of going to college by just a quarter of one percent. But having a "high quality" teacher, he says, regardless of [test scores](#), bumped that percentage up to one percent. He also found that one percent of [students](#) who had certain distinguished teachers had higher [earnings](#) on average than other teachers.

All in all, Chamberlain says, the data shows that having a high quality teacher means more kids going to [college](#) and more of them earning more money later on in life. He adds that science is still working on figuring out what exactly constitutes a good teacher, but suggests research efforts such as his are helping to get closer.

More information: Predictive effects of teachers and schools on test scores, college attendance, and earnings, *PNAS*, Published online before print October 7, 2013, [DOI: 10.1073/pnas.1315746110](https://doi.org/10.1073/pnas.1315746110)

Abstract

I studied predictive effects of teachers and schools on test scores in fourth through eighth grade and outcomes later in life such as college attendance and earnings. For example, predict the fraction of a classroom attending college at age 20 given the test score for a different classroom in the same school with the same teacher and given the test score for a classroom in the same school with a different teacher. I would like to have predictive effects that condition on averages over many classrooms, with and without the same teacher. I set up a factor model that, under certain assumptions, makes this feasible. Administrative school district data in combination with tax data were used to calculate estimates and do inference.

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