

Teacher experience Pre-K to 12 Education

Literature review updated April 2012.

As part of WSIPP's research approach to identifying evidence-based programs and policies, WSIPP determines "what works" (and what does not work) to improve outcomes using an approach called meta-analysis. For detail on our methods, see our [Technical Documentation](#). At this time, WSIPP has not yet calculated benefits and costs for this topic.

Program Description: We performed an analysis of how student test scores improved as their teacher's years of experience increased—more experienced teachers are compared with beginning teachers. This estimate represents the average annual gain in the first five years of teaching.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Test scores	53	14393842	0.058	0.005	11	0.058	0.001

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our [Technical Documentation](#).

Citations Used in the Meta-Analysis

- Aaronson, D., Barrow, L., & Sander, W. (2007). Teachers and student achievement in the Chicago public high schools. *Journal of Labor Economics*, 25(1), 95-135.
- Akerhielm, K. (1995). Does class size matter? *Economics of Education Review*, 14(3), 229-241.
- Archibald, S. (2006). Narrowing in on educational resources that do affect student achievement. *Peabody Journal of Education*, 81(4), 23-42.
- Borland, M. V., Howsen, R. M., & Trawick, M. W. (2005). An investigation of the effect of class size on student academic achievement. *Education Economics*, 13(1), 73-83.
- Boyd, D., Lankford, H., Loeb, S., Rockoff, J., & Wyckoff, J. (2008). The narrowing gap in New York City teacher qualifications and its implications for student achievement in high-poverty schools. *Journal of Policy Analysis & Management*, 27(4), 793-818.
- Brown, B.W., & Saks, D.H. (1975). The production and distribution of cognitive skills within schools. *Journal of Political Economy*, 83(3), 571-593.
- Buddin, R., & Zamarro, G. (2009). Teacher qualifications and student achievement in urban elementary schools. *Journal of Urban Economics* 66(2), 103-115.
- Chingos, M.M., & Peterson, P.E. (2011). It's easier to pick a good teacher than to train one: Familiar and new results on the correlates of teacher effectiveness. *Economics of Education Review*, 30(3), 449-465.

- Clotfelter, C.T., Ladd, H.F., & Vigdor, J.L. (2006). Teacher-student matching and the assessment of teacher effectiveness. *The Journal of Human Resources*, 41(4), 778-820.
- Clotfelter, C.T., Ladd, H.F., & Vigdor, J.L. (2007). Teacher credentials and student achievement: Longitudinal analysis with student fixed effects. *Economics of Education Review*, 26(6), 673-682.
- Clotfelter, C.T., Ladd, H.F., & Vigdor, J.L. (2010). Teacher credentials and student achievement in high school: A cross-subject analysis with student fixed effects. *Journal of Human Resources*, 45(3), 655-681.
- Corcoran, S.P., Jennings, J.L., & Beveridge, A.A. (2011). *Teacher effectiveness on high- and low-stakes tests*. Unpublished manuscript, New York University.
- Croninger, R.G., Rice, J. K., Rathbun, A., & Nishio, M. (2007). Teacher qualifications and early learning: Effects of certification, degree, and experience on first-grade student achievement. *Economics of Education Review*, 26(3), 312-324.
- Goldhaber, D.D., & Brewer, D.J. (1996). Evaluating the effect of teacher degree level on educational performance. In W. J. Fowler, Jr. (Ed.), *Developments in school finance, 1996: Fiscal proceedings from the Annual NCES State Data Conference* (pp. 197-210). Washington, DC: U.S. Department of Education, National Center for Education Statistics.
- Goldhaber, D.D., & Brewer, D.J. (1997). Why don't schools and teachers seem to matter? Assessing the impact of unobservables on educational productivity. *The Journal of Human Resources*, 32(3), 505-523.
- Goldhaber, D.D., & Brewer, D.J. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22(2), 129-145.
- Goldhaber, D.D., Brewer, D.J., & Anderson, D.J. (1999). A three-way components analysis of educational productivity. *Education Economics*, 7(3), 199-208.
- Goldhaber, D., & Anthony, E. (2007). Can teacher quality be effectively assessed? National board certification as a signal of effective teaching. *The Review of Economics and Statistics*, 89(1), 134-150.
- Goldhaber, D., Liddle, S., Theobald, R., & Walch, J. (2010). *Teacher effectiveness and the achievement of Washington's Students in Mathematics* (CEDR Working Paper 2010-06). Bothell: University of Washington Bothell, Center for Education Data & Research.
- Hanushek, E.A. (1992). The trade-off between child quantity and quality. *Journal of Political Economy*, 100(1), 84-117.
- Harris, D.N., & Sass, T.R. (2011). Teacher training, teacher quality and student achievement. *Journal of Public Economics*, 95(7- 8), 798-812.
- Hill, H.C., Rowan, B., & Ball, D.L. (2005). Effects of teachers' mathematical knowledge for teaching on student achievement. *American Educational Research Journal*, 42(2), 371-406.
- Huang, F.L., & Moon, T.R. (2009). Is experience the best teacher? A multilevel analysis of teacher characteristics and student achievement in low performing schools. *Educational Assessment, Evaluation and Accountability*, 21(3), 209-234.
- Jacob, B.A., & Lefgren, L. (2008). Can principals identify effective teachers? Evidence on subjective performance evaluation in education. *Journal of Labor Economics*, 26(1), 101-136.
- Jepsen, C., & Rivkin, S. (2002). *Class size reduction, teacher quality, and academic achievement in California public elementary schools*. San Francisco: Public Policy Institute of California.
- Kane, T.J., Rockoff, J.E., & Staiger, D.O. (2008). What does certification tell us about teacher effectiveness? Evidence from New York City. *Economics of Education Review*, 27(6), 615-631.
- Koedel, C., & Betts, J.R. (2007). *Re-examining the role of teacher quality in the educational production function*. Unpublished manuscript, University of Missouri-Columbia, Department of Economics.
- Krieg, J.M. (2006). Teacher quality and attrition. *Economics of Education Review*, 25(1), 13-27.
- Krueger, A.B. (1999). Experimental estimates of education production functions. *The Quarterly Journal of Economics*, 114(2), 497-532.
- Kukla-Acevedo, S. (2009). Do teacher characteristics matter? New results on the effects of teacher preparation on student achievement. *Economics of Education Review*, 28(1), 49-57.
- Ladd, H.F., Sass, T.R., & Harris, D.N. (2007). *The impact of national board certified teachers on student achievement in Florida and North Carolina: A summary of the evidence prepared for the National Academies Committee on the evaluation of the impact of teacher certification by NBPTS*. Unpublished manuscript.
- Leak, J.A., & Farkas, G. (2011). *Effects of teacher credentials, coursework, and certification on student achievement in math and reading in kindergarten: An ECLS-K study*. Evanston, IL: Society for Research on Educational Effectiveness.
- Leigh, A.K. (2010). Estimating teacher effectiveness from two-year changes in students' test scores. *Economics of Education Review*, 29(3), 480-488.
- Ost, B. (2009). *How do teachers improve? The relative importance of specific and general human capital*. Unpublished manuscript, Cornell University, Ithaca, NY.
- Pil, F.K., & Leana, C. (2009). Applying organizational research to public school reform: The effects of teacher human and social capital on student performance. *Academy of Management Journal*, 52(6), 1101-1124.
- Rockoff, J.E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *The American Economic Review*, 94(2), 247-252.
- Subedi, B.R., Swan, B., & Hynes, M.C. (2011). Are school factors important for measuring teacher effectiveness? A multilevel technique to predict student gains through a value-added approach. *Education Research International*, 2011. doi: 10.1155/2011/532737
- Xu, Z., Hannaway, J., & Taylor, C. (2009). *Making a difference? The effects of Teach for America in high school* (Working Paper 17. Revised). Washington, DC: The Urban Institute, National Center for Analysis of Longitudinal Data in Education Research.

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