



THE VOICE FOR PROFESSIONAL  
EDUCATORS AND STUDENTS

#### Evidence: QUALITY TEACHER PREPARATION CORRELATES WITH HIGHER STUDENT ACHIEVEMENT

We have a great deal of evidence reflective of a positive correlation between teachers' knowledge of teaching and learning and student achievement, reaching back fifty years. What follows is a summary of that evidence. For a more robust review of the evidence, please see *The Merits of Teaching Preparation Grounded in Equity: Critical Components for Developing and Retaining Educators who are Responsive to Minnesota's Diverse and Complex Communities* (2017).

Evertson, Hawley, and Zlotnik (1985) reported a positive effect of teachers' formal education training on a number of indicators of teacher effectiveness, including supervisory ratings and student learning. Monk's (1994) study of student achievement in mathematics and science found that teacher preparation positively correlated to student achievement, more so than subject matter preparation. Monk concluded, "**it would appear that a good grasp of one's subject area is a necessary but not a sufficient condition for effective teaching**" (p. 142). Guyton and Farokhi (1987) and Denton and Lacina (1984) also demonstrated consistent and strong correlations between teachers' education coursework and student achievement (ctd. in Darling-Hammond, 2000, p. 5). Other early studies that found a correlation between teachers with training in content and pedagogy and higher student achievement include Hice, 1970; LuPone, 1961; McNeil, 1974; Erekson & Barr, 1985; Evertson, Hawley, and Zlotnik, 1985; Ashton 1996.

The National Assessment of Educational Progress has also documented the connection between teacher learning and student achievement. In their study, "4th grade students of teachers who were fully certified, who had master's degrees, and who had had professional coursework in literature-based instruction did better than other students on reading assessments. While these relationships were modest, the relationships between specific teaching practices and student achievement were often quite pronounced, and these practices were in turn related to teacher learning opportunities" (qtd. in Darling-Hammond, 2000, p. 6). In short, they found that teachers who had more professional education training used teaching practices that led to higher reading achievement. In 1999, Mark Felter of the California Department of Education published a study focused on high schools in California that investigated the relationship between mathematics teachers' skill and student achievement. **Felter controlled for family income in the study and still concluded that teacher preparation could serve as a mechanism by which to predict student success on exams.**

In 2001, Suzanne M. Wilson, Robert E. Floden, and Joan Ferrini-Mundy, of Michigan State University, working under advisement from experts from the National Research Council, the University of Wisconsin, Madison, Stanford University, The Spencer Foundation, and the University of California at Berkeley, prepared a report for the U.S. Department of Education and the Office for Educational Research and Improvement. In their report, they attempted (1) to summarize what was at that time known about teacher

preparation and (2) make recommendations for future research on teacher preparation. In order to write their report, Wilson et al. (2001) reviewed the findings of 57 research studies that met their stringent criteria for inclusion in their analysis. Wilson et al. (2001) focused on research that explored the impact of pedagogical preparation across several components of teacher preparation programs. The following are among the findings of the studies the authors include in their review:

- the students of certified mathematics teachers scored higher on standardized mathematics tests than those of uncertified teachers.
- a negative correlation between percent of teachers with emergency certification and student mathematics achievement.
- secondary teachers with no pedagogical preparation were limited in their ability to engage high school students in the subject matter, and that those new teachers taught as they had been taught in high school and college.
- that education coursework was a better predictor of teaching success than subject matter major or GPA prior to entering teacher education programs.
- that teachers attributed their knowledge of a range of instructional strategies, classroom discipline and management, and classroom routines to their education coursework.

Scholars have also concluded that the most effective teachers have not only pedagogical preparation, but content-specific preparation as well. Darling-Hammond, 2000; Goldhaber & Brewer, 2000; Guyton & Farokhi, 1987; Monk, 1994 all show a positive correlation between teachers' subject matter preparation and both higher student achievement and higher teacher performance evaluation scores, in mathematics, science, and reading.

Importantly, education researchers have also built a strong body of evidence to show that a lack of teacher preparation leads to negative outcomes for students. **This evidence also highlights the fact that students of color suffer the most harm in states with increasing numbers of underprepared teachers.** Researchers started showing that certain students, particularly students of color and students living in poverty, were far more likely to be assigned to the most ineffective teachers (Sanders & Rivers, 1996, qtd. in Darling-Hammond, 2000, p. 2). Patricia Ashton (1996) of the University of Florida at Gainesville, noted that states' efforts to reduce teacher certification requirements "no doubt contribute to students' academic failure" (p. 21). She also stressed "that these policies exacerbate inequities in the quality of education offered to low-income children in comparison to children from more economically advantaged homes. Teachers without regular certification are more often assigned to teach in schools with predominantly low-income children and children of color than are regularly certified teachers" (Ashton, 1996, p. 21).

In 2002, Harold Wenglinsky, then a researcher for the Educational Testing Service, published a study in which he explored the link between teacher practices in the classroom and student academic performance. In this study, Wenglinsky examined the correlation between math and science achievement levels of more than 7,000 eighth graders to measures of teaching quality and student social class background. He found that teachers' background in content and in teacher education and ongoing professional development had strong effects on achievement. Another important 2002 study is "Legislating Equity: The Distribution of Emergency Permit Teachers in California," written by Laura Goe, of the University of California, Berkeley. Goe's study examines the effects of California's high number of emergency permit teachers on student achievement. She controls for both student and school characteristics. Her findings indicate that "**generally, the more emergency permit teachers**

**there are in a school, the lower the school's achievement”** (Goe, 2002, p. 1). Goe (2002) also examined the distribution of emergency permit teachers throughout California. She confirmed what other researchers have uniformly found to be the case in other places by arguing: emergency permit teachers tend to be concentrated in schools with low standardized test scores, high percentages of minority students and English learners, and high percentages of students with free or reduced-price lunch status (Goe, 202, p. 2). **The students who most need qualified, highly trained teachers, and stable teachers, therefore, are the students who are least likely to get them** (p. 2).

Grossman, Schoenfeld, & Lee (2005) echo the findings of multiple researchers when they assert that “at a minimum, prospective teachers need a solid foundation in the subject matters they plan to teach and the requisite disciplinary tools to continue learning within the subject matter throughout their careers” (p. 206). Content and content-specific pedagogy are interrelated and highly complex and they are critical components of teacher preparation. Teachers must know both subject matter and how to deliver that content knowledge to students.

#### References

- Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8(1), 1-44.
- Educator Policy Innovation Center. (2017). *The Merits of Teaching Preparation Grounded in Equity: Critical Components for Developing and Retaining Educators who are Responsive to Minnesota's Diverse and Complex Communities*. [Policy Paper]. Retrieved from [https://www.educationminnesota.org/EDMN/media/edmn-files/advocacy/EPIC/EPIC\\_TeacherPrep\\_Booklet\\_1.pdf](https://www.educationminnesota.org/EDMN/media/edmn-files/advocacy/EPIC/EPIC_TeacherPrep_Booklet_1.pdf).
- Evertson, C., Hawley, W., & Zlotnik, M. (1985). Making a difference in educational quality through teacher education. *Journal of Teacher Education*, 36(3), 2-12.
- Felter, M. (1999). High school staff characteristics and mathematics test results. *Education Policy Analysis Archives*. 7(9).
- Goe, L. (2002). Legislating equity: The distribution of emergency permit teachers in California. *Educational Policy Analysis Archives*, 10(2), 1-36.
- Goldhaber, D. D., & Brewer, K. J. (2000). Does teacher certification matter? High school certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22, 129-145.
- Grossman, P. L. (1989). Learning to teach without teacher education. *Teacher College Record*, 91, 191-207.
- Grossman, P. L., Schoenfeld, A., & Lee, C. (2005). Teaching Subject Matter. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 201-231). San Francisco, CA: Jossey-Bass.
- Wilson, S, Floden, R., & Ferrini-Mundy, J. (2001). *Teacher preparation research: Current knowledge, gaps, and recommendations*. Center for the Study of Teaching and Policy, University of Washington.