



What the Research Says

A high quality, aligned-to-standards curriculum coupled with professional support for educators can significantly improve student performance. Here's what the research says:

EFFECTS ON STUDENT LEARNING

- Matthew Chingos and Grover Whitehurst found “strong evidence that the choice of instructional materials has large effects on student learning—effects that rival in size those that are associated with differences in teacher effectiveness” ([Chingos & Whitehurst, 2012](#)).
- When analyzing teacher preparations for administering different assessments, Thomas Kane found that the textbook effects on student achievement were substantial ([Kane, Owens, Marinell, C. Thal, & Staiger, 2016](#)). As he summarized in an essay for Brookings, “if all schools could be persuaded to switch to one of the top quartile textbooks, student achievement would rise overall by roughly 0.127 student-level standard deviations or an average of 3.6 percentile points” ([Kane, 2016](#)).

IMPACT ON DISADVANTAGED STUDENTS

- Globally, research has found that environments of high academic achievement appear to support academic resilience among disadvantaged students (for example, [Erberber, Stephens, Mamedova, Ferguson, & Kroeger, 2015](#)).
- The National Center for Education Evaluation and Regional Assistance looked at whether some early elementary school mathematics curricula are more effective than others at improving student achievement in disadvantaged schools. Their findings suggest that the curriculum selected mattered in terms of student mathematics achievement ([Agodini, Harris, Thomas, Murphy, & Gallagher, 2010](#)).

SELECTING QUALITY & CURRICULUM ADOPTION

- A recent convening in NYC discussed the nature and role of science instructional materials for new science standards, and documented several recommendations for schools, districts, states, and the field (Bybee & Chopyak, 2017).
- David Steiner conducted a research review on the effects of curricular choices in K–12 education for the Knowledge Matters Campaign. The key takeaways from their reviewer are that “curriculum is deeply important, that a teacher’s or district’s choice of curriculum can substantially impact student learning, and that—as a result—the paucity of evidence upon which sound instructional, purchasing, and policy decisions can be made is a matter of deep concern and urgent need” ([Steiner, 2017](#)).
- In California, researchers reviewed the relative achievement effects of the four most commonly adopted elementary-mathematics textbooks and found one to be more effective than the other three at raising student achievement ([Koedel, Li, Polikoff, Hardaway, & Wrabel, 2016](#)).
- Rachana Bhatt and Cory Koedel looked at curriculum adoption data in Indiana to evaluate differences in performance across three elementary-mathematics curricula in 2012 ([Bhatt & Koedel, 2012](#)). In 2013, they evaluated curricular effectiveness in elementary mathematics in Florida. In both cases, they found that textbook choice had statistically significant effects on test scores ([Bhatt & Koedel, 2013](#)).

PROFESSIONAL DEVELOPMENT

- C. Kirabo Jackson and Alexey Makarin reported that the impact of implementing a high-quality curriculum increases when coupled with professional development, and while this impact occurs for all teachers, it is largest for weakest teachers ([Jackson & Makarin, 2016](#)).
- Joseph A. Taylor and his team found that curriculum must be part of an integrated delivery model to drive change in teacher behavior. This leads to an even greater impact on student outcomes ([Taylor et al., 2015](#)).
- William Penuel's research team found a need for professional development and time for teachers to plan. Furthermore, the research highlights that "alignment" isn't always very clearly understood ([Penuel, Fishman, Gallagher, Korbak, & Lopez-Prado, 2009](#)). More recently, Penuel worked with Angela Haydel DeBarger to provide "empirical evidence that under supportive district conditions and within a research-practice partnership, purposefully adapted curriculum materials can improve student understanding of science and that these are linked to shifts teachers make in classroom culture facilitated by augmented curriculum materials" ([DeBarger et al., 2016](#)).
- This past April, Ross Wiener and Susan Pimentel authored a paper addressing the need to tie professional learning with the curriculum being implemented. They argue that "integrating professional learning and curriculum into a holistic approach for improving teaching and learning is an important element of meeting the goal of educating all students and giving teachers the support they need to become expert practitioners" ([Wiener & Pimentel, 2017](#)).

STATE IMPLEMENTATION & SCIENCE

Louisiana

- A recent RAND study found that in Louisiana, "professional development strategy is explicitly intended to support curriculum implementation by targeting and supporting development that is aligned with standards and curricula." This linkage is one reason the study found that "compared with other teachers nationally, Louisiana teachers use some Common Core-aligned instructional resources at a higher rate than other teachers, demonstrate a better understanding of their Common Core-aligned standards, and report undertaking more instructional activities that align with their standards" ([Kaufman, Thompson, & Opfer, 2016](#)).

Next Generation Science Standards

- With the development of the Next Generation Science Standards (NGSS), schools and districts are looking for guidance with implementation. One guide published by experts in the field describes strategies for schools and district leaders to consider when designing NGSS implementation plans, which includes curriculum adoption as a key strategy ([Penuel, Harris, & DeBarger, 2015](#)). Achieve's NGSS Adoption and Implementation Workbook reaches the same conclusions ([Achieve, 2013](#)). Michael Lach explores ideas about how state and local education agencies can monitor and track data about curriculum use and adoption, concluding that "new metrics, coupled with appropriate support, can improve education" ([Lach, 2016](#)).
- In looking at science curriculum implementation, researchers found that "middle school science teachers who used curriculum materials that presented opportunities for students to engage in science practices improved their students' performance on next generation science assessments" ([Harris, Penuel, DeBarger, D'Angelo, & Gallagher, 2014](#)).

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