Academic Standards

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Introduction

Academic standards set goals for the skills and content knowledge that students should learn.[1] The policy—sometimes referred to as content standards—typically includes goals for each grade and subject,[2] and the policy itself is a list of learning targets with an associated grade that includes dozens or, sometimes, hundreds of items. Individual standards are often organized in domains, including numeracy in mathematics and comprehension in English language arts (ELA).[3]

In state education policy, the influence of academic standards is ubiquitous. In addition to assessments and school accountability, academic standards are one of the three components of standards-based reforms (SBR), where schools face consequences if standardized tests show that they have not met the learning goals defined in academic standards. The widespread use of academic standards dates to the SBR of the 1990s.[4] By the mid-2000s, federal law required every state to enact academic standards for math and ELA. The most recent reform effort peaked with the adoption of the next generation of academic standards (which some viewed as being of higher quality) by most states in 2009. The designers of SBR intended academic standards to be used as a guide not only for assessment and accountability but also for other state policies, including teacher evaluation, curricular materials, and professional development.

Today, every state has math and ELA standards for students in every grade (i.e., kindergarten through 12th grade). Many states also have academic standards in other subjects, such as science and social studies. The most frequently used set of academic standards are the Common Core State Standards (CCSS), which were widely adopted in the early 2010s. Most states that implemented these standards made small revisions to them over time. Therefore, while state academic standards are overall similar, none are identical.

A key challenge for CCSS implementation was the decline in support among teachers. Initially, the CCSS enjoyed broad support across stakeholders and political ideologies. In 2012, when the first states began implementing the CCSS, overall support for them was 63%.[5] In 2012, 72% of teachers and 64% of parents supported the standards, along with the majority of Democrats and Republicans. By 2021, overall support for the CCSS had plummeted to 43%, including 47% of parents and 46% of teachers.[6] Opposition to the CCSS grew for several interconnected reasons. Some were concerned that the CCSS interfered with teachers' autonomy in the classroom and that federal support represented an overreach. Additionally, the CCSS also emphasized phonics over whole-word approaches for reading instruction. Finally, opposition to updated assessments was also a factor in the distaste for the CCSS.

The purpose of academic standards is to ensure that schools set high expectations for every student's learning.[7] Furthermore, academic standards are meant to ensure the uniformity of expectations along two dimensions. First, academic standards make learning goals consistent for every school in a specific

locality. Second, academic standards are the same for students regardless of their gender, race/ethnicity, socioeconomic status, disability, and group.

The arguments for and against academic standards have merit. Proponents of academic standards reform typically focus on how the policy is envisioned to work. They argue that (1) academic standards have been too lax and that they do not prepare students to succeed in college or in the globalized labor market. This critique was particularly salient for early generations of academic standards. (2) Academic standards promote equity by pressuring schools with weak student outcomes overall or for marginalized groups to improve. High standards can combat lower expectations for students from marginalized groups that contribute to educational inequality. (3) Standards can also benefit students by eliminating unnecessary differences between schools. For example, the transition for a teacher or for students who move to a new district will be easier given the coherence imposed by content standards.[8]

The arguments against academic standards have often focused on the flawed implementation of the policy. They include the following. (1) Academic standards are agnostic to systematic educational inequality and are not a solution to inequalities beyond a school's control. Specifically, the expectations of education systems cannot address the effects of poverty, such as housing instability or hunger, or the influence of racism. (2) It is difficult for a centralized government to enforce academic standards. States lack the capacity to observe instruction in millions of classrooms. Standardized tests can serve as a tool for monitoring the outcomes of SBR, but standardized tests are administered infrequently and are often criticized for their quality and utility. (3) The standardization caused by academic standards may harm teacher autonomy and stifle innovation. Academic standards inhibit teachers from using their own expertise to make contextualized judgements about instruction. In some cases, academic standards also specify the use of instructional materials, further impinging on teachers' decision making.

Today, debates about academic standards have quieted considerably from their peak, and standards remain firmly embedded in state policies. State efforts to modify or rebrand academic standards following the most recent period of reform have declined considerably, although the challenges in achieving robust implementation remain unsolved.

Key findings

Key finding #1: *Experts generally believe that recently adopted academic standards are somewhat better than No Child Left Behind (NCLB)-era standards.*

Experts have assessed academic standards during the NCLB era as being weak, on average, in terms of clarity, quality, and curricular alignment, for example. Analysis of the CCSS math and ELA academic standards has revealed modest improvements over the NCLB status quo. For example, CCSS provide clear and detailed guidelines for instructional content. In ELA, they emphasize the inclusion of writing from canonical genres. In math, they avoid overemphasizing the use of algorithms and technology.

Key finding #2: *The extent to which academic standards have influenced the content of teachers' instruction has varied greatly.*

Some studies have found that teachers increase their focus on content areas emphasized in academic standards. Others have found that academic standards do not change the content taught. Evidence suggests that the alignment between academic standards and instruction depends on teacher characteristics. Teachers who feel a greater sense of autonomy are more likely to align their instruction with academic standards.

Key finding #3: *Textbooks have not generally been well aligned with academic standards.*

Publishers did not initially make substantive changes to textbooks after revisions to academic standards. Additionally, schools may take several years to purchase new textbooks. The pattern of results suggests that changes have not increased the alignment between textbooks and academic standards.

Key finding #4: *The implementation of recent academic standards reforms has not been successful.*

The rapid rollout of the standards has not allowed adequate time for implementation. The fragmented governance structure, involving numerous entities at the federal, state, and local levels, has resulted in varied and often conflicting policies, leading to inconsistent implementation. Furthermore, education systems have not been provided with sufficient resources to implement changes, exacerbating the issue.

Key finding #5: *Overall, recent reforms to academic standards have failed to meaningfully influence student achievement.*

Most studies have found that academic standards have substantively small effects on student achievement. The purpose of academic standards is to equalize expectations for all students, which should lead to especially large benefits for marginalized students. These results suggest that recent reforms to academic standards may result in small decreases in racial achievement gaps but not socioeconomic gaps. What is clear is that the most recent round of reforms to academic standards failed to achieve the lofty goals set by the reforms' designers. Determining the true effect of academic standards is also complicated by the narrow time span during which states rapidly adopted changes to these standards. Additionally, there is the challenge of separating the effects of reforms to academic standards from other related reforms (e.g., accountability, assessments).

Understudied topics? The inherent difficulty of writing developmentally appropriate standards is an important context for understanding research on academic standards. The zone of proximal development is not clearly understood for all subjects and grades. In other words, education policymakers lack the tools to determine whether academic standards are too high, too low, or just right—the Goldilocks problem. The foundational skills that students need may be the same across the country, but learning needs will vary based on the needs of specific communities. Consequently, some differences in standards are likely to be necessary and could be beneficial.

Policy history

The SBR era began in the United States with the publication of the *A Nation at Risk* report in 1983. The report describes concerns about the weaknesses of the American education system. *A Nation at Risk* also proposes rigorous academic standards as an essential reform to improve education systems. In 1989, a bipartisan group of governors and President George H. W. Bush gathered in Charlotte for an education summit. The result of the Charlotte Summit was a framework for education reform that included academic standards and that would influence state policy for the next decade. In the same year as the summit, the National Council of Teachers of Mathematics released its first set of standards.[9] Several years later, the National Council of Teachers of English released its first standards in 1993.[10] A year later, in 1994, the federal government passed the Improving America's Schools Act (IASA), which was the first federal law to include incentives for states to adopt academic standards.[11] Under IASA, any state that elected to receive federal school improvement funding had to develop academic standards within one year. As a result of IASA, 31 states adopted academic standards in math and ELA.[12] In 2001, Congress replaced IASA with NCLB, which required all states to have academic standards in math and ELA by 2003–2004. The movement for academic standards was reinvigorated in 2009 when state education reform organizations, including the National Governors Association and Council of Chief State

School Officers, began the Common Core project. States began to adopt and implement these standards over the next few years.

Theory of action

Before an examination of the evidence, it is useful to consider the circumstances under which academic standards would benefit students. Academic standards that raise expectations for student learning are likely to have a positive effect. If academic standards set low expectations or make no change, then there will be no effect on student outcomes. Academic standards are also designed to influence teachers' instruction and curricula. If teachers do not align their instruction or teaching materials with high-quality academic standards, then, similarly, there will be no effect on student outcomes. Additionally, increasing the coherence and clarity of academic standards could benefit students. Academic standards can help to coordinate and scaffold content across grades and subjects. For this reason, academic standards should improve the efficacy of schools, which would likely promote improved student outcomes.

Evidence

Estimating the effects of a state policy, such as academic standards, is challenging for several reasons. The most acute issue in estimating the effects of recent academic standards is the lack of a true control group. From a methodological perspective, it would be ideal to compare states that implemented academic standards to a group of states that had no academic standards at all. However, NCLB has required all states to have rigorous academic standards since 2004. As a result, it is only possible to explore whether new standards (e.g., CCSS) are superior to the prior wave of academic standards. Furthermore, states choose when to implement academic standards reforms, which could confound the effects of academic standards. Specifically, differences in states' capacity to implement reforms can influence both educational outcomes and the timing of the changes to academic standards. Another concern is that academic standards are part of a larger package of education reforms that are implemented at the same time. In particular, it is difficult to isolate the effects of academic standards from the effects of the accountability and testing policies that are often associated with these standards.

Key finding #1: *Experts generally believe that recently adopted academic standards are somewhat better than NCLB-era standards.*

Recently adopted academic standards are somewhat better than NCLB-era policies. Experts have assessed academic standards during the NCLB as being weak, on average. The American Federation of Teachers (AFT) rated approximately one-fourth of academic standards during the NCLB era as being weak.[13] The AFT also found that ELA standards were weaker than math standards. An analysis by the Fordham Institute rated only nine states as having high-quality academic standards under NCLB.[14] The Fordham Institute also found that recent academic standards for math and for ELA were improved in 39 states and in 37 states, respectively.[15] Subject matter experts evaluated the (1) "rigor" and (2) clarity/specificity of academic standards.

Evaluations of recently reformed academic standards have found that quality varies widely. A follow-up study by the Fordham Institute found that several years after states adopted high-quality academic standards, there was evidence of backsliding.[16] Several states continue to have weak academic standards. Recent writing standards have been "succinct and balanced, with breadth of coverage in some aspects of writing but not others."[17] The CCSS math standards were a modest improvement compared to the NCLB status quo, having a greater emphasis on cognitive demand and complex mathematical topics.[18] A similar analysis found that CCSS ELA standards represented a small but detectable improvement.[19]

Researchers typically evaluate quality by comparing academic standards with another list of competencies that students should learn. However, there is no universally agreed upon method for determining the quality of standards. The validity of this process assumes that it is possible to know the purpose of education. ELA standards that emphasize phonics over whole-word approaches to reading instruction could be considered either weak or strong, depending on the assumptions about the ideal way to teach reading. Given this context, the recent round of academic standards is, on average, likely an improvement. However, that average change masks states that could improve their academic standards.

Key finding #2: *The extent to which academic standards have influenced the content of teachers' instruction has varied greatly.*

The extent to which academic standards have influenced teachers' instruction has varied greatly. Furthermore, this effect is difficult to pin down because of measurement issues (e.g., obtaining accurate reports of what and how teachers are teaching across a large sample of classrooms). One group of researchers found that an overwhelming majority of math and ELA teachers reported focusing on content that was emphasized in high-quality academic standards.[20] Math teachers reported an increased focus on understanding concepts and real-world applications. ELA teachers reported an increased focus on informational text/nonfiction and a decreased focus on narrative writing and literature. This pattern of changes suggests that the CCSS influence the topics that teachers choose to teach. However, there is also contradictory evidence. Other researchers found no significant changes in practices that were aligned with academic standards for math students. For example, there were no changes in whether math teachers reported that they focused on having students "explain and justify their work" or use "repeated practice to improve their computational skills." These researchers found that ELA teachers decreased their focus on practices aligned with academic standards.[21] Furthermore, ELA teachers were less likely to report that their lesson plans included practices that are aligned with academic standards, including having students "know and apply grade-level phonics and word analysis skills in decoding words" and "analyze how two or more texts address similar themes."

The influence of recent reforms to academic standards is consistent with that of prior reform efforts. Under NCLB, every state was required to establish academic standards. Research suggests that NCLB increased the alignment between teachers' instruction and academic standards by 19–65% of a standard deviation (s.d.) in math. NCLB also increased alignment in ELA and science, but the size of the effect was substantively smaller.[22]

There are substantial methodological barriers to estimating the effect of academic standards on instruction. The variation in research on how academic standards influence teachers' instruction is likely due to the differences in the methods used by studies and in the study contexts. No studies exploring the relationship between academic standards and teachers' instruction have used causal methods. Instead, these studies have used surveys and compared responses across cohorts of teachers or across teachers in different states. Furthermore, none of the studies of recent reforms to academic standards have used nationally representative data. The relationship between academic standards and teachers' instruction is likely to depend on local education contexts. Differences in policy design across districts and states likely explain some of the variation in the effects of academic standards on teachers' instruction. As an additional challenge, social desirability bias may influence teacher responses. Teachers may seek to appear compliant with state policy on academic standards. Alternatively, teachers may use the survey to protest a policy that they believe impinges on their autonomy.

Key finding #3: *Textbooks have not generally been well aligned with academic standards.*

Curricular materials, including textbooks, have not been well aligned with academic standards. States make changes to their adopted curricular materials slowly, even after they have implemented new academic standards. Additionally, teachers maintain substantial autonomy over instructional materials, even after schools have adopted new textbooks. Only one study has examined the alignment between academic standards and curricular materials.[23] It examined 4th-grade math textbooks in Florida and found evidence of a significant misalignment between academic standards and curricular materials. While academic standards emphasized complex skills and reasoning, textbooks focused on algorithms and memorization. Another study found that it took years for California schools to use textbooks aligned with new academic standards.[24] Specifically, it took approximately four years in math and three years in ELA after the adoption of the CCSS for the widespread adoption of aligned textbooks. Teacher surveys are another source of evidence on changes to instructional materials. A group of researchers found that many teachers report making substantive changes to their instructional materials. However, the response varied across subjects: 82% of math teachers and 27% of ELA teachers reported changing at least half of their instructional materials after changes to academic standards. In addition, approximately 20% of math and ELA teachers reported changing all of their instructional materials.

The lack of effective curricular materials may be an important factor in the failure of academic standards. The success of academic standards reforms depends on publishers developing textbooks that are aligned with the updated standards. If publishers make only superficial changes to textbooks, switching instructional materials is unlikely to have a positive effect. A group of researchers conducted a national study of textbooks that claimed to be aligned with updated academic standards.[25] These researchers found that the choice of textbook is weakly related to student outcomes, which suggests that textbooks were not substantively changed after new academic standards were put into place.

Examining the relationship between academic standards and alignment with instructional materials is challenging. To explore this relationship, researchers survey teachers about their instructional materials and examine the textbooks that schools report using. Neither approach can demonstrate that academic standards cause a change in the instructional materials used by teachers. Teacher survey responses may be biased because of their desire to show compliance with or to rebel against state policy.

Despite the methodological differences in studies, the available evidence suggests that academic standards and curricular materials are weakly aligned. Research suggests that teachers are making changes to their instructional materials after reforms to academic standards. However, the pattern of results suggests that there is still only moderate implementation of well-aligned and high-quality curricular materials in classrooms.

Key finding #4: *The implementation of recent academic standards reforms has not been successful.*

Qualitative analyses of educators and school systems support the conclusion that the implementation of recent academic standards reforms has not been fully successful. Teacher collaboration has occasionally created resistance to top-down standardization policies. For example, teachers' unions have organized efforts against academic standards reforms by emphasizing the role of professional expertise.[26] Teachers have reported that academic standards reforms have influenced their personal and professional lives. The implementation of recent academic standards has required the time and effort of teachers.[27]

District and school leadership also may play a key role in implementing academic standards. Education leaders can clarify and then provide support for specific action steps that are needed to implement academic standards. States typically provide districts with considerable flexibility in implementing academic standards, contributing to inconsistent implementation.

Overall, implementation of the most recent round of academic standards has not been robust enough to overcome decentralized education governance. Researchers have explored the challenges in implementing high quality-academic standards, such as the CCSS.[28] The overly ambitious and rapid rollout of academic standards has not allowed adequate time for adaptation. The fragmented governance structure, involving numerous entities at the federal, state, and local levels, has resulted in varied and often conflicting policies, leading to inconsistent implementation. Additionally, diverse standards and practices among states and districts, coupled with resistance to perceived federal overreach, have complicated the efforts to adopt a unified curriculum. Resource disparities, such as funding inequities and unequal access to materials and training, have created further implementation gaps. Effective reform requires comprehensive professional development and teacher support; however, inadequate training and resources often hinder these efforts. Political and ideological opposition, along with policy shifts and changes in leadership, can disrupt the continuity and sustainability of reforms.

Key finding #5: *Overall, recent reforms to academic standards have failed to meaningfully influence student achievement.*

Overall, studies show that recent reforms to academic standards have been unsuccessful because they have not substantially improved student achievement.[29] Table 1 includes a high-level summary of the effects of academic standards. Each row in Table 1 describes the effects of the most recent reforms to academic standards for math and ELA. Specifically, the table includes a description of whether significant positive or negative effects were found, a synopsis of the magnitude of the effects, and the specific achievement outcomes that were observed. Five out of seven studies showed small positive effects on math in the range of 0–4% s.d.. The effect of academic standards on ELA scores was small and positive in three out of six studies, but it was moderate in size and negative in one study. The level of resources invested into developing, planning for, and implementing changes to academic standards created the expectation that the reforms would have a large positive effect. With that context in mind, the effect of contemporary academic standards is, at best, very modest. What is clear is that the most recent round of reforms to academic standards failed to achieve the lofty goals set by the reforms' designers.[30] Only one study has examined the effects of recent reforms to academic standards on noncore subjects.[31] The study found that recent academic standards reforms had a small negative effect on science test scores and no detectable effect on achievement in civics, economics, geography, or history.

The differences between comparison groups likely explain the variation across studies in the effects of recent academic standards on math and ELA achievement. These differences notwithstanding, there are several relevant similarities across studies. They each use quasi-experimental methods that leverage panel data to estimate the effects of academic standards, either within a specific state or across the country. Each study exploits the staggered rollout of academic standards to compare a group that has implemented contemporary academic standards with a group that will implement contemporary academic standards in the future.

The results from the two national CCSS studies that have been conducted to date provide useful insights into the effects of academic standards. One study found that the CCSS increased 4th-grade math NAEP scores by 5 percent of an s.d. and 8th grade math National Assessment of Educational Progress (NAEP) scores by 4.5% s.d..[32] The study found no evidence of effects on ELA NAEP scores. The other study found insignificant effects on math NAEP scores and small significant negative effects on 4th-grade ELA NAEP scores.[33] The differences in outcomes are a function of how the treatment and comparison groups are defined.

Prior to the recent wave of reforms to academic standards that began in 2010, every state had had academic standards in place for a minimum of six years. The two studies described in the paragraph above followed up with relatively weak academic standards. However, they used different decision rules to determine the quality of prereform academic standards. The group with baseline high-quality standards was considered the comparison group because implementing new academic standards was not a substantial divergence from business as usual. The group with relatively weak standards was considered the treatment group because the implementation of contemporary academic standards represented a substantial departure from the previous policy.

Single states have taken a different approach to constructing treatment and comparison groups. These studies compare achievement in a group of schools or districts implementing the new academic standards to another group of schools or districts using status quo academic standards. Critically, none of the designs in the extant literature can fully account for important confounders (e.g., teacher support, resources invested, capacity). Prereform differences in academic standards could explain differences in student achievement. Specifically, a state with relatively weak prereform standards could have a large base of support for adopting new academic standards, which in turn could explain large positive effects. Alternatively, a state with strong prereform standards that had developed a strong SBR infrastructure could disproportionately benefit from implementing high-quality academic standards.

The purpose of academic standards is to equalize expectations for all students, which should lead to especially large benefits for marginalized students. The evidence shows that contemporary academic standards have had a larger positive effect for students who were ineligible for free and reduced-price lunch (FRPL) than for students who were eligible for FRPL.[34] This pattern suggests that academic standards increase the gaps between economically advantaged and disadvantaged students. The CCSS have appeared to cause moderate decreases in the size of the White–Black and White–Hispanic achievement gaps.[35] This finding suggests that academic standards may help mitigate racial stereotypes about expectations for student achievement.

Areas for future study

Overall, research on the effects of academic standards on math and ELA scores is well developed. Nonetheless, how academic standards influence non-test-score outcomes is not well understood. There are also no experimental studies that have established the effects of academic standards. More research on how to support school improvement through academic standards is needed.

Policy implications

An important component of the implementation of academic standards is their alignment with SBR. SBR rely on the assumption that assessments are aligned with academic standards. If teachers are responsive to the incentives created by SBR systems, then they will align their curricular materials and instruction with academic standards. Under NCLB, the weak alignment between assessments and academic standards suggests that SBR systems were not functioning as intended.[36] In many states under NCLB, standards and assessment communicated different priorities regarding what teachers were responsible for teaching. Whether this issue was resolved with the most recent round of academic standards reforms remains unclear. However, improving the alignment of SBR systems will be an important strategy. One strength of this approach is that it could improve student outcomes without resource-intensive policy changes.

Two researchers offer insightful policy recommendations for future reforms to academic standards.[37] One researcher advocates for state leadership in identifying high-quality curricular materials. Similarly, the other researcher proposes a cautious and incremental approach to implementing academic

standards. He stresses that aligning new standards with existing curricula, instructional materials, and assessments is a time-intensive process for teachers and school leaders. Both researchers emphasize that sustainable reform necessitates building consensus and addressing political opposition. Taken together, their recommendations underscore the importance of undertaking strategic planning, providing comprehensive support for educators, and fostering collaboration and consensus to achieve successful and lasting educational improvements.

The future of academic standards is somewhat difficult to envision. There is general agreement that schools should have high expectations for students. As a result, few would argue that states should abandon setting academic standards. The remaining policy alternatives center on the level of government that should set academic standards. Currently, the federal government has been legally barred from establishing national academic standards. Reforming that law would bring the policymaking approach of the U.S. into alignment with that of other Western nations. Another option would be to devolve the governance of academic standards to districts or schools. This approach would allow academic standards to be tailored to the needs of specific communities. However, it would also likely increase the variation in expectations and the number of schools with low academic standards. States could again seek to reform their standards. The most impactful policy would be responsive to the critics of academic standards and ensure that schools have the resources to support learning for all students.

Table 1. Effects of Common Core State Standards on Math and English Language Arts

Study	Math			ELA		
	Sign	Magnitude	Measure	Sign	Magnitude	Measure
Allensworth et al., 2021	+	Small	GPA/NWEA			
Bleiberg, 2021	+	Small	NAEP	Null	Null	NAEP
Gao & Lafortune, 2019	+	Small	Percent	+	Small	Percent
Lee & Wu, 2017	Null	Null	NAEP	Null	Null	NAEP
Loveless, 2012, 2014, 2016	+	Small	NAEP	+	Small	NAEP
Song et al., 2022	Null	Null	NAEP	-	Medium	NAEP
Xu & Cepa, 2018	+	Small	ACT	+	Small	ACT

Note and sources: * indicates that a study did not undergo peer review. The sign of the estimate is indicated only if the effect is statistically significant. Magnitude is based on Matthew Kraft's article on effect sizes published in 2020.

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Suggested citation

Bleiberg, Joshua (2025). "Academic Standards," *in Live Handbook of Research on Education Finance and Policy*, in Douglas Harris (ed.), Association for Education Finance and Policy, viewed MM/DD/YYYY, <WEB LINK>.