

Educational Interventions

AT A GLANCE

While New Mexico has seen modest progress in student achievement over the past few years, the state faces a persistent achievement gap, with some groups of students continuing to lag behind. The performance of economically disadvantaged students on statewide assessments lags behind that of their non-economically-disadvantaged peers by about 15 percentage points. Students also face disparities in graduation rates, with the four-year graduation rate for economically disadvantaged students almost five percentage points lower than the state average.

New Mexico's poor educational outcomes impose costs on the state, and improving outcomes can lead to significant savings. For every additional high school graduate, the long-term benefit to taxpayers is over \$125,000.

A review of research literature, as well as estimates from Results First, a nationally recognized, peer-reviewed model, indicate that while many interventions have positive outcomes, interventions that provide teachers with learning and growth opportunities, as well as academic and non-academic student interventions including extended learning time, targeted to individuals or small groups, have relatively higher benefit-to-cost ratios.

Selecting proven, evidence-based interventions can increase the likelihood of meaningfully improving outcomes. Interventions must also be implemented with fidelity, or according to prescribed models, in order to achieve expected benefits.

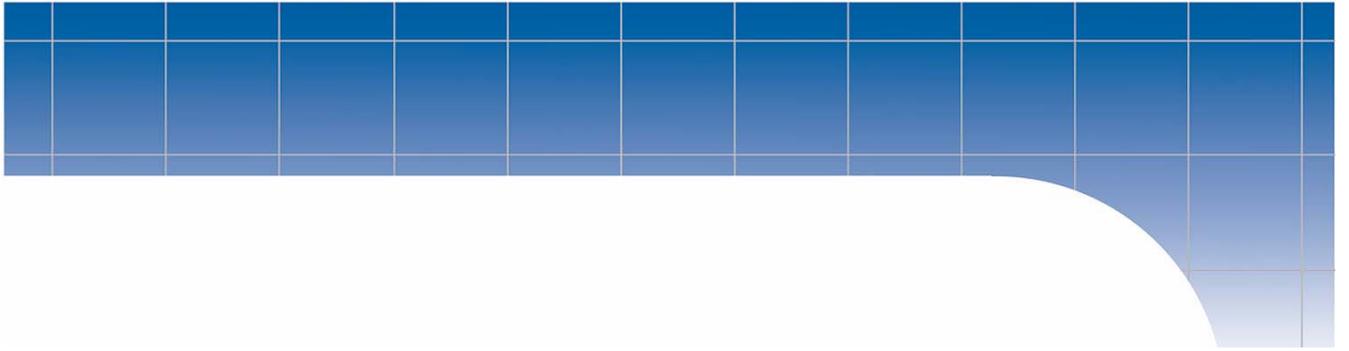
While there is no silver bullet for improving outcomes and closing the achievement gap, implementing a range of evidence-based interventions targeting both students and teachers can increase the chances of success for all New Mexico students.

For just one cohort of students, raising the graduation rate for economically disadvantaged students to the statewide average would translate to long-term taxpayer benefits of over \$100 million.

Results First uses a nationally recognized, peer-reviewed model with three steps: (1) Use the best research to identify what works, what doesn't, and how effective various programs are in achieving policy goals. (2) Apply state-specific data to the national results. (3) Compare costs with projected benefits.



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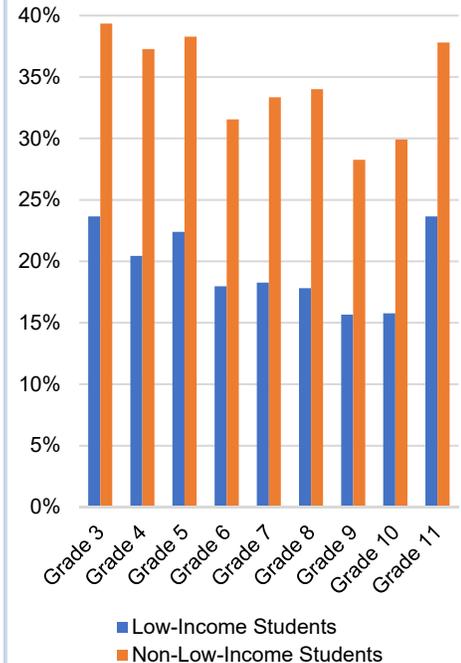


Background

By many measures, New Mexico has poor educational outcomes. As of 2017, New Mexico had the second-lowest high school graduation rate in the country, at 71 percent, and just one out of four of the state’s eighth graders perform at or above proficiency level in math and reading on the National Assessment of Educational Progress (NAEP). Students in the state also face large achievement gaps. LFC research has found that while students, overall, gain approximately a year’s worth of academic growth in each grade, many start out behind, and by the third grade, low-income students, on average, perform below grade level proficiency in reading and math. In SY18, low-income students were less likely to be proficient on standardized reading assessments across grade levels (Chart 1). Students also face disparities in graduation rates. The four-year graduation rate for economically disadvantaged students is almost five percentage points below the state average (Chart 2). These learning gaps especially impact students considered at-risk, which includes low-income students, high-mobility students, and English Learner (EL) students. Seventy percent of New Mexico public school students were counted in the funding formula as at-risk in FY18.

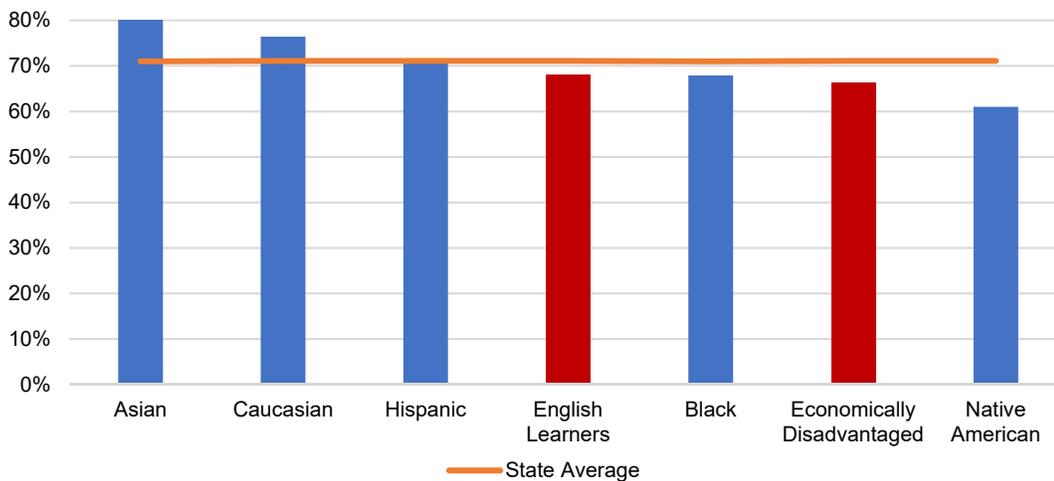
This evaluation draws on cost-benefit analysis, social policy clearinghouses, and other research to identify effective educational programs and interventions that may lead to improved student outcomes. Where possible, the evaluation identifies benefit-to-cost ratios from Results First, a nationally-recognized, peer-reviewed model (see Report Overview section and Appendix A for more detail on Results First).

Chart 1. Share of Students Proficient or Above in PARCC Reading, SY18



Source: LFC analysis of PED data
 Note: Low-income status is based on participation in free or reduced price lunch (FRL) program

Chart 2. Four-Year Graduation Rates, 2017 Cohort



Source: PED Cohort of 2017 4-Year Graduation Rates data



In July 2018, the state’s First Judicial District Court ruled that the state does not provide students with a sufficient public education.

In 2014, two lawsuits, *Yazzie v. State of New Mexico* and *Martinez v. State of New Mexico*, alleged that the state does not provide enough funding to ensure a sufficient education for at-risk students, especially Native American students, EL students, students with disabilities, and low-income students. In July 2018, a district judge agreed, ruling on the consolidated lawsuits that the state was not meeting its constitutional duties. The Court ordered the state to develop, and begin implementing, a Court-approved plan to provide a sufficient education for students and allocate sufficient funding for public education by April 15, 2019.

Table 1. Benefits of High School Graduation

Source	Benefits to Taxpayers	Benefits to Participant
Higher education	(\$23,943)	(\$7,386)
Crime	\$1,970	-
Health care	\$34,699	(\$9,554)
Earnings	\$115,805	\$255,009
TOTAL	\$128,531	\$238,069

Source: Results First using New Mexico assumptions
 Note: Negative numbers in red reflect costs to taxpayers and/or participants

Closing achievement gaps can lead to positive economic and other benefits.

New Mexico’s poor educational outcomes impose costs on the state, and improving outcomes can lead to significant savings. For example, Results First estimates that for every additional high school graduate, the long-term benefit to taxpayers is over \$125 thousand, a result of savings from decreased costs to the healthcare and criminal justice systems, as well as increased lifetime earnings. The benefit to the student is approximately \$238 thousand (Table 1). For just one cohort of students, raising the graduation rate for economically disadvantaged students to the statewide average – from approximately 66 percent to 71 percent – would mean long-term taxpayer benefits of over \$100 million and benefits to graduating students of almost \$190 million. Raising the statewide graduation rate to 84 percent – the national average – would result in long-term taxpayer benefits of \$441 million and benefits to students of \$817 million.

New Mexico should prioritize implementation of research-based interventions.

While there is no silver bullet to improve educational outcomes and close the achievement gap, research suggests that certain types of programs and interventions are more beneficial than others. Estimates from Results First, using New Mexico cost assumptions, indicate that broadly, interventions that provide teachers with learning and growth opportunities, as well as student interventions targeted to individuals or small groups, have relatively high benefit-to-cost ratios.

At the systems level, the National Conference of State Legislatures’ (NCSL) *No Time to Lose* report identified common elements that high-performing school systems around the world share: strong programs for early childhood readiness, especially for disadvantaged students; highly selective teacher preparation programs concentrated in research universities; rigorous licensure systems with career paths that allow for teacher advancement; rigorous systems of career and technical education; and carefully aligned education reforms (see Figure 1 for more detail).



Prioritizing evidence-based interventions can result in better outcomes. Existing educational research explores practices and interventions that are most effective in improving student outcomes (often defined as achievement on assessments). Selecting proven interventions can increase the likelihood of meaningfully improving outcomes. However, research on educational practices is unlikely to be based on true experimental, or randomized studies, in part due to the difficulty of controlling the educational environment and separating the effects of interventions from other school- or environment-based effects. The federal Every Student Succeeds Act (ESSA), which requires that interventions for struggling schools be evidence-based, uses four tiers of evidence, allowing for practices with moderate or promising evidence, as well as those with a well-defined logic model (for more detail, see the Report Overview section).

To achieve expected outcomes, programs must be implemented with fidelity. While a number of interventions identified in this evaluation have positive benefit-to-cost ratios, positive results assume that programs are implemented with fidelity, or according to prescribed intervention models. Fidelity refers not only to the content of an intervention, but also its delivery, including the duration and frequency with which participants receive content. According to criteria from the Institute of Education Sciences, the research division of the U.S. Department of Education, an intervention can be replicated if it is branded (i.e. a commercial program available for distribution and use beyond a single site), or if the duration, characteristics, target population, and curriculum and/or instructional practices used are clearly described. This evaluation focuses on non-branded interventions, some of which are generic, such as professional development or teacher performance pay. This does not mean that all professional development programs will have positive effects on student outcomes, but rather that certain program models or designs have been shown to have positive effects, when implemented with fidelity.

Overall, New Mexico spends approximately \$9,700 per student, less than the national average but more than other regional states.

While New Mexico's overall spending per pupil, taking into account federal, state, and local funding sources, is higher than most other regional states, it is 20 percent less than the national average (Chart 3). The state's proportion of instruction spending as a share of total per-pupil spending is 56 percent, slightly below the national average of 60 percent, and the proportion of support services spending as a share of total spending – 39 percent – is slightly above the national average of 36 percent.

Figure 1. Elements of a World Class Education System

- **Children come to school ready to learn**, and extra support is given to struggling students so that all have the opportunity to achieve high standards.
- **A world-class teaching profession supports a world-class instructional system**, where every student has access to highly effective teachers and is expected to succeed.
- **All students are expected to be ready for college and career**, and all educators are expected to get them there. A highly effective, intellectually rigorous system of career and technical education is available to those preferring an applied education.
- **Individual reforms are connected and aligned** as parts of a clearly planned and carefully designed comprehensive system.

Source: NCSL *No Time to Lose* report, 2016

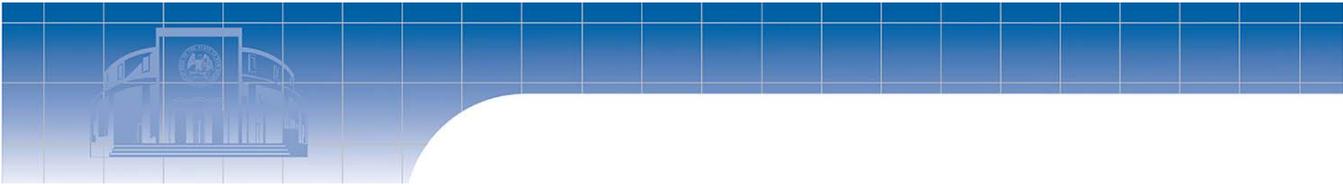
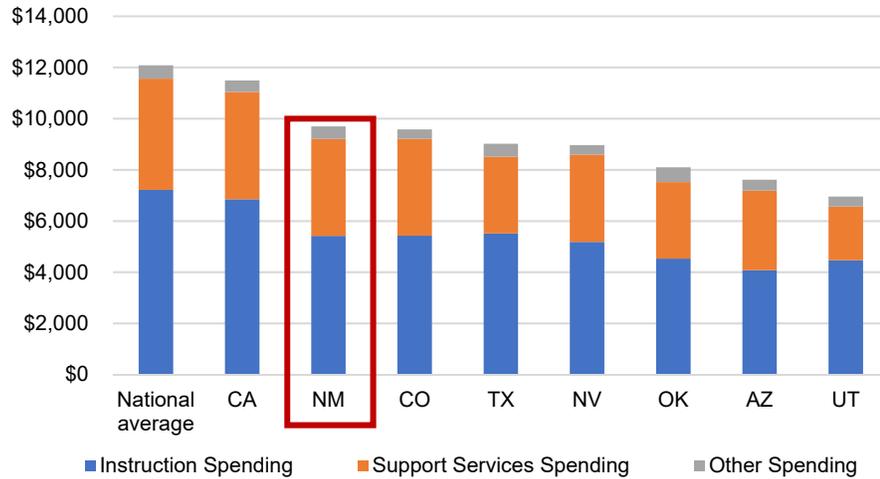


Chart 3. Spending Per Pupil By State, 2016



Source: 2016 Annual Survey of School System Finances, U.S. Census Bureau
 Note: Spending figures do not include capital outlays, interest on debts, and payments to other governments

Funding increases focused on instruction and support services may improve outcomes

Targeting increased spending on certain populations of students with evidence-based interventions yields better and more cost-beneficial results that simply increasing funding. Research suggests that while overall increases in school funding may improve student outcomes, effects are small. Increased funding that focuses on instruction and support services can yield better outcomes, although improvements in outcomes are typically still modest. As detailed in this report, spending on evidence-based interventions focused on at-risk students yield the best and most cost-beneficial outcomes. In addition, funding increases that target more money to low-income districts, relative to high-income districts, can improve outcomes for students in those districts.

Reform-induced spending increases were associated with reductions in student-to-teacher ratios, increases in teacher salaries, and longer school years

A 2016 study from the Quarterly Journal of Economics looked at school finance reform lawsuits to estimate the effect of exogenous (or externally-imposed) funding increases, and found a relationship between increased funding and outcomes, concluding that a 25 percent increase in per-pupil spending across 12 years of school can eliminate average achievement gaps. The LFC recommendation for FY20 State Equalization Guarantee funding is a 15 percent increase from the FY19 operating budget, from \$2.6 billion to \$3 billion. Increasing per-pupil spending by 10 percent across 12 years of school increased adult income by 7.7 percent, and decreased the annual incidence of poverty in adulthood by 2.7 percent. It also increased the likelihood of graduating from high school by 7 percent, which is lower than some other interventions. For example, some preschool models can increase high school graduation rates by 14 percent. While the authors note that it is difficult to use observational data to identify specific mechanisms leading to positive outcomes, the study found that exogenous increases in funding are more likely than other types of spending increases to go towards instruction and support services. Specifically, reform-induced spending increases were associated with reductions in student-to-teacher ratios, increases in teacher salaries, and

longer school years. A 2017 working paper from the National Bureau of Economic Research found that ten years after a school finance reform event, the relative achievement of students in low-income districts rose by approximately one-fifth of the baseline gap between high- and low-income districts. However, increased funding through finance reforms was less effective at addressing achievement gaps within districts.

Based on New Mexico per-pupil spending, increasing expenditures by 10 percent for a student cohort from kindergarten through grade 12 is expected to have a positive but relatively small benefit-to-cost ratio – approximately \$1.50 to \$1 according to Results First – implying that simply spending more may not be a particularly cost-effective way to improve outcomes (Table 2).

Table 2. Expected Benefit to Cost Ratio of Increasing Per-Pupil Expenditures by 10 Percent

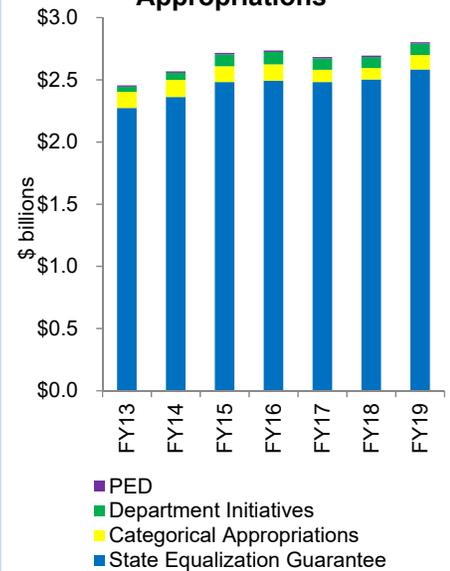
Intervention	Benefit-to Cost-Ratio	Chance Benefits Will Exceed Costs	Effect Size on Test Scores	Effect Size on Graduation Rates
10% spending increase for one student cohort from kindergarten through grade 12	\$1.50	56%	0.120	0.101

Source: Results First model, using New Mexico assumptions¹

Just over 3 percent of general fund appropriations for public schools went towards line-item department initiatives.

New Mexico allocated approximately 44 percent of general fund appropriations to public schools for FY19. Of this, approximately 92 percent went towards the State Equalization Guarantee, or funding formula. Just over 3 percent went to department initiatives, or line-item programs (Chart 4). In FY19, there were 17 department initiatives in the public schools budget, totaling \$90.9 million in general fund appropriations. Nearly two-thirds of funding for initiatives went towards K-3 Plus and prekindergarten (Figure 2).

Chart 4. Public Education General Fund Appropriations



Source: LFC Files

¹ Cost-benefit ratios in this report are based on New Mexico-specific assumptions, including the following: **estimated intervention costs**, using New Mexico program information, salary data, and other data where relevant; and **population data**, including graduation and college completion rates, special education populations, adult earnings, crime rates, and healthcare costs. For more information, see Appendices A and C.



**Figure 2. General Fund Appropriations for
Department Initiatives, FY19**
(thousands)

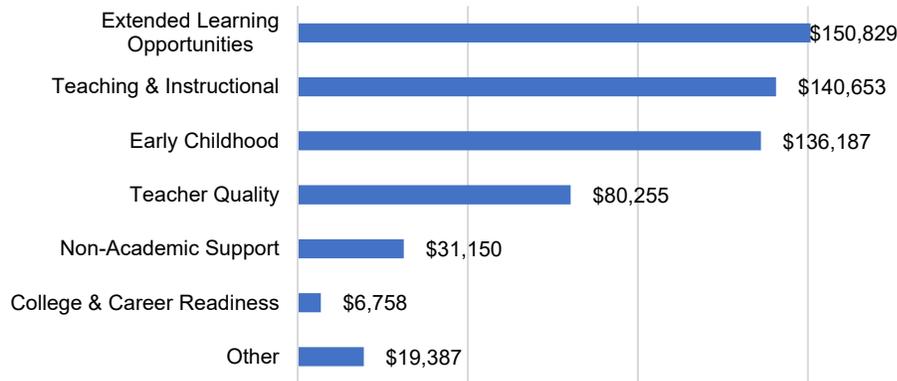
Department Initiative	Recurring General Fund Appropriations
K-3 Plus Fund	\$ 30,200
Public Prekindergarten Fund	\$ 29,000
Early Literacy Initiatives	\$ 8,837
Interventions and Support for Students, Teachers, Struggling Schools, and Parents	\$ 4,000
Truancy and Dropout Prevention Coaches	\$ 4,000
STEM Initiative (Science, Technology, Engineering, and Math Teachers)	\$ 3,000
Principal Mentorship - Principals Pursuing Excellence	\$ 2,000
Teacher Mentorship - Teachers Pursuing Excellence	\$ 2,000
Breakfast for Elementary Students	\$ 1,600
College Preparation, Career Readiness, and Dropout Prevention	\$ 1,500
Regional Education Cooperatives	\$ 1,038
Teacher Evaluation System	\$ 1,000
School Teacher and School Leader Preparation Programs	\$ 1,000
Advanced Placement	\$ 1,000
After School and Summer Enrichment Programs	\$ 325
New Mexico Grown Fruits and Vegetables	\$ 200
GRADS – Teen Parent Interventions	\$ 200
TOTAL	\$ 90,900

Source: LFC files

Between FY13 and FY19, the largest funding amounts went to programs focused on extended learning opportunities (mostly K-3 Plus), teaching and instructional practices, and early childhood (mostly prekindergarten). Smaller amounts went to programs focused on teacher quality, non-academic support for students, and alternative learning models (Chart 5).



Chart 5. Cumulative General Fund Appropriations for Department Initiatives by Area, FY13-FY19
(thousands)



Source: LFC files

Some department initiatives do not have a clear evidence base. Many department initiatives are not truly targeted, but rather serve as funding streams for several loosely-related programs or initiatives. For example, Interventions and Support for Students, Teachers, Struggling Schools, and Parents funds a wide range of programs, including professional development, Principals Pursuing Excellence, training on NMDASH (a planning tool for schools), and support for districts participating in a school turnaround program. Similarly, the Early Reading Initiative, or Reads to Lead, awards funding to local education agencies (LEAs) to implement reading programs, as well as funding literacy coaches, assessment systems, and a book program for first graders. While outcomes of prekindergarten and K-3 Plus have been evaluated, shown to have promising effects on student achievement outcomes, there are not clear results from many other investments in initiatives.

Outcomes of prekindergarten and K-3 Plus have been evaluated, but there are not clear results from many other investments in initiatives



Report Overview

This evaluation draws on cost-benefit analysis from the Results First model, social policy clearinghouses, and other research to identify effective educational programs and interventions that may lead to improved student outcomes. The evaluation examines interventions that fall into seven broad focus areas:

- Teacher quality – page 14
- Extended learning time – page 17
- Non-academic supports – page 19
- Teaching and instructional practices – page 21
- College and career readiness – page 23
- Class size – page 25
- Charter schools – page 28

The evaluation seeks to answer three main questions about programs and interventions:

- 1. Is there strong evidence of a positive impact?** The evaluation indicates whether there is evidence that a program or intervention has an effect on student outcomes, categorizing evidence as either strong, promising, mixed/inconclusive, or no effect. For programs not included in the Results First model, evidence ratings from social policy clearinghouses are used where available. In other cases, evidence ratings are based on the federal Every Student Succeeds Act (ESSA) tiers of evidence for educational interventions (Figure 3). Unless otherwise noted, evidence base for interventions refers to research examining whether interventions have an effect on student achievement, typically standardized test performance or high school graduation rates. Other outcomes, such as school attendance and social or health indicators, are identified where available and relevant. See Table 3 for more detail on how evidence levels in this evaluation correspond to clearinghouse ratings, Results First outputs, and ESSA tiers of evidence.

Table 3. Evidence Level Inputs

Evidence Level		Clearinghouse Rating	Results First	ESSA Tiers of Evidence
Strong	<i>Corresponds to...</i>	Highest rated or second-highest rated	Shows effects in model	Strong or moderate evidence
Promising				Promising evidence
Mixed/inconclusive		Mixed effects		
No effect		No effects	Does not show effects in model	

Figure 3. ESSA Tiers of Evidence for Educational Interventions

- **Tier 1 – Strong Evidence:** supported by one or more well-designed and well-implemented randomized control experimental studies.
- **Tier 2 – Moderate Evidence:** supported by one or more well-designed and well-implemented quasi-experimental studies.
- **Tier 3 – Promising Evidence:** supported by one or more well-designed and well-implemented correlational studies (with statistical controls for selection bias).
- **Tier 4 – Demonstrates a Rationale:** practices that have a well-defined logic model or theory of action, are supported by research, and have some effort underway by an SEA, LEA, or outside research organization to determine their effectiveness.

Source: ESSA



This evaluation focuses primarily on identifying strong or promising interventions (those that fall into ESSA evidence tiers 1, 2, and 3). However, in some cases, policymakers may want to consider interventions that fall into tier 4 (“demonstrates a rationale”). For example, it may make sense to implement less rigorously tested interventions on a pilot basis, in order to gather information on performance outcomes and assess whether to scale them further.

- 2. How large is the effect (if known)?** If possible, relative effects of an intervention are identified. While two interventions may have similarly strong evidence of impact on student achievement, one may have only a modest effect, while another may have a large effect.
- 3. What is the benefit-to-cost ratio?** The benefit-to-cost ratio refers to the amount that the state would be expected to save for every dollar invested in the program, assuming that programs are run with high fidelity. Where available, benefit-to-cost analyses are based on estimates from Results First, using New Mexico-specific costs or cost assumptions. See Appendix A for more detail about Results First. Benefit-to-cost ratios are a useful measure because they monetize, or place a dollar value, on expected outcomes, allowing for comparison across programs and interventions. A number of programs do not have a benefit-to-cost ratio, because they are not included in the Results First model. This does not mean they are necessarily less cost-beneficial, only that Results First has not yet examined them in detail.

An intervention with a high benefit-to-cost ratio is not necessarily “better” than one with a lower ratio

While benefit-to-cost ratios are helpful in allowing for comparisons across interventions, it is important to note that an intervention with a high benefit-to-cost ratio is not necessarily “better” than one with a lower ratio. An inexpensive intervention may have a high benefit-to-cost ratio, even if it has relatively modest effect on student outcomes. Similarly, an intervention with a low benefit-to-cost ratio may be very effective, but also expensive. In addition, benefits of interventions accrue over the long-term (Results First uses a 50-year time horizon), and some interventions will have an earlier “breakeven” point, meaning the point in time in which benefits begin to outweigh costs. Because a strong education system should include a range of both targeted and broad interventions, it is important to consider effective, targeted interventions that address identified needs, not merely the interventions with the highest benefit-to-cost ratios. For detail on overall effects and benefits of individual interventions, as well as cumulative cash flows, see Appendix D.

This evaluation is organized by focus area identifying cost-beneficial and evidence-based interventions. More detail on programs and interventions is included in the Review of Programs and Interventions: Descriptions and Experience in New Mexico section starting on page 31, organized by focus areas, and then by evidence level, with interventions with strong evidence of effectiveness listed first, then interventions with promising evidence, and finally interventions with mixed, inconclusive, or no effects. Those sections



also include brief summaries of relevant programs or interventions being implemented in New Mexico within each focus area.

This evaluation focuses on school-based interventions. Research suggests that home- and community-based factors have a significant impact on students' K-12 outcomes, and interventions that address those factors can meaningfully improve outcomes. For example, a 2018 report from the Learning Policy Institute, a non-profit education research group, argues that adverse childhood experiences – such as growing up in poverty, food insecurity, or incarceration of a family member – are connected to poor educational outcomes. While school-based interventions can help to address these issues, through nutrition programs, case management, and parent outreach, out-of-school interventions are also critical. Programs like home visiting, income support, and other social services can improve health and academic outcomes for children, and while these types of interventions are not covered in this evaluation, they should form an integral part of any comprehensive strategy to improve school outcomes and close achievement gaps.

There are some limitations to the analysis in this evaluation. Results First, as well as most research, considers the effects of single interventions, not the effects of interactions between different interventions, making it difficult to know the effects on students of receiving multiple interventions. In addition, most rigorous research uses student achievement on assessments as an outcome measure. While standardized test scores are far from the sole indicator of good outcomes for students and there is disagreement over how well they measure student knowledge or other important characteristics, they are a quantitative measure that allows for a level of comparison between various programs and interventions. Results First primarily uses student test scores, as well as high school graduation rates, to monetize, or estimate the value, of an intervention's outcomes.



Some models of teacher professional development and coaching can improve teacher effectiveness and student outcomes

Effective teaching is arguably the most important school factor impacting student outcomes. The importance of effective teachers is reflected by average learning gains across classrooms, which often vary significantly, even within the same school. For example, a 2010 article in the *Economics of Education Review* found that some classrooms see 1.5 years of achievement gains within an academic year, while others with similar students see only half a year of gains. Differences in teacher quality can result in substantially different outcomes for students in school and beyond. The same article indicated that a teacher one standard deviation above the mean effectiveness can generate marginal gains of over \$400 thousand in future student earnings.

From a financial perspective, teacher quality is one of the most significant investments that the state makes in education, with teacher compensation and benefits accounting for 86 percent of variable LEA costs in New Mexico in FY17.

Teacher professional development and teacher coaching are evidence-based practices that can have a meaningful effect on student achievement. The most effective professional development models are those that are content based, or focused on skills and concepts specific to a teacher’s discipline, and job-embedded. Mentoring and induction for new teachers is also effective. However, the most common form of professional development – one-off workshops and conferences – is generally not effective. Similarly, coaching of teachers by experienced teachers is an effective method to improve teaching practices and student outcomes, and targeted, content-focused coaching is more effective than coaching on generic topics. LEAs should invest in sustained, targeted professional development and coaching, identifying skills and concepts to help teachers improve their teaching practice, but it is unclear whether they are, as the state has not required LEAs to have updated plans for professional development that align with statute or best practices.

To incentivize effective teaching, performance or merit pay for teachers can have modest effects on student learning, and is a relatively cost-beneficial intervention, but must be structured carefully – with substantive, differentiated bonuses – to be effective. Bonuses or loan repayment for teachers in hard-to-staff schools can also improve student outcomes; bonuses for hard-to-staff subjects may do so as well, but research is less conclusive. The Higher Education Department (HED) currently administers both a loan-for-service and loan repayment program, with a two-year service requirement. Each has limited funding and the loan-for-service program has a delayed impact with high default rates.

In order to recruit and retain qualified teachers, LEAs may want to consider teacher residencies, an intensive training model that shows promising evidence

Targeted, job-embedded professional development and coaching is more effective than general, one-off interventions

of effectiveness in training high-quality teachers. Grow Your Own programs, a model to recruit and support prospective teachers, needs more study and evaluation to determine effectiveness.

For more detail on teacher quality programs and interventions, see page 31.

Table 4. Summary of Teacher Quality Interventions

Intervention	Evidence of Positive Impact	Benefit-to-Cost-Ratio	Chance Benefits Will Exceed Cost	Effect Size on Test Scores
Teacher professional development	Strong (<i>depends on model</i>)			
<i>Use of data to guide instruction</i>		\$132	98%	0.117
<i>Targeted</i>		\$38	79%	0.071
<i>Online, targeted</i>		\$9	61%	0.020
<i>Induction/mentoring</i>		\$0	38%	0.046
<i>Not targeted</i>		\$6	60%	0.000
Teacher coaches/consultant teachers	Strong (<i>depends on model</i>)			
<i>Content-focused coaching</i>		\$190	94%	0.107
<i>Online coaching</i>		\$93	92%	0.082
<i>Literacy collaborative</i>		\$32	99%	0.428
<i>Coaching</i>		\$28	81%	0.060
Teacher experience	Strong	\$13	99%	0.058
Teacher performance pay	Strong	\$22	87%	0.019
Incentives for hard to staff subjects/schools	Strong	<i>Not in RF</i>		
Teacher evaluation systems	Promising	<i>Not in RF</i>		
Teacher residency programs	Promising	<i>Not in RF</i>		
National Board Certification	Mixed or Inconclusive*	<i>Not in RF</i>		
Grow Your Own programs	Mixed or Inconclusive	<i>Not in RF</i>		
Teacher graduate degrees	No Effect	\$0	7%	0.000

* Indicates that program is included in a social policy clearinghouse
Source: Results First, using New Mexico assumptions

Recommendations

The Legislature should consider:

- Amending state law (Section 22-8-45 NMSA 1978) to require professional development programs to be evidence-based (based on the federal Every Student Succeeds Act's four tiers of evidence).
- Including language in the General Appropriation Act directing PED to require school districts and charter schools to develop detailed plans for professional development programs by the end of FY20, including use of evidence-based practices (e.g. based on ESSA's four tiers of evidence), goals of program, and methods to measure progress towards goals, and submit plans to PED for review.
- Eliminating the loan-for-service program for prospective teachers administered by HED (for more detail on this program, see page 36).



PED should:

- Update its professional development framework, including a focus on evidence-based professional development programming, based on ESSA's four tiers of evidence.
- Develop a pilot proposal for two to three teacher residency programs, as part of four-year bachelor programs, including a randomized controlled trial to evaluate outcomes, and request \$1-2 million in funding for FY21.

School districts and charter schools should:

- Prioritize funding for evidence-based professional development programs, including those that are job-embedded and content-based, as well as new teacher induction and mentoring programs.

HED should:

- Track employment outcomes for participants in the teacher loan repayment program to assess whether the program has an impact on teacher retention.

Creating more time for student learning and enrichment can improve outcomes, but additional time must be high quality

Additional learning time – either as part of the regular school year, or as add-on programs – can serve as a tool to expand learning opportunities, helping to offset learning gaps for low-income students. Additional learning time provides for more time engaged in academics, more time for enrichment activities, and more time for teacher collaboration and professional development.

Additional time is either added to the school day and/or school year, or added as out-of-school time (OST) in the form of summer or afterschool programs. Typically, an extended school day or school year model targets all students in a particular school or district, while OST models may target certain student populations (e.g. students struggling with academic skills), or be voluntary. Some models use a combination of approaches.

Evidence shows that academically-focused summer and afterschool programs have a positive effect on student achievement. Non-academic programs may have other benefits that are not well measured. Evidence also shows that extended instructional time – through longer school days or years – is an important tool to expand learning opportunities for at-risk students, boosting achievement. In particular, extended school years can help to mitigate summer slide, or learning loss, that disproportionately effects low-income students. Extended learning time also forms a core component of the community school model.

However, any additional time must be high quality, taught by effective teachers who can leverage time well and are supported by relevant professional development.

LEAs can leverage additional funding for extended learning time by implementing high-quality afterschool programming, adding additional days to the school year, and providing time for teachers to engage in evidence-based professional development.

Any additional learning time must be high-quality, taught by effective teachers who can leverage time well

Table 5. Summary of Extended Learning Time Interventions

Intervention	Evidence of Positive Impact	Benefit-to-Cost-Ratio	Chance Benefits Will Exceed Cost	Effect Size on Test Scores
Summer learning programs (academic focus)	Strong*	\$8	88%	0.064
Afterschool programs (academic focus)	Strong	<i>Not in RF</i>		
Longer school years/days	Promising	<i>Not in RF</i>		

* Indicates that program is included in a social policy clearinghouse
Source: Results First, using New Mexico assumptions



For more detail on extended learning time programs and interventions, see page 42.

Recommendations

The Legislature should consider:

- Adding an Extended Learning Time Program (ELTP) component to the public education funding formula that allocates funding for schools implementing the following extended learning time reforms:
 - Providing an additional 10 instructional days, in addition to 180 instructional days that are already funded;
 - Providing high-quality afterschool programming to extend daily learning time;
 - Providing at least 80 hours of high-quality, evidence-based professional development, collaboration, and other teacher learning content; and
 - Implementing a set of best practices to ensure that learning time is effective.
- Appropriating additional funds for a new ELTP component of the public education funding formula.
- Adding statutory language to require that implementation of an ELTP program follows best practices, incorporates evidence-based professional development and high-quality afterschool programming, and includes regular monitoring and evaluation, as well as requiring participating schools to first commit to providing at least 180 instructional days.
- Expanding the K-3 Plus program to include all students in grades K-5 at all eligible schools.



Programs supporting students' social, emotional, and physical well-being improve outcomes and should complement evidence-based instructional practices

To succeed, students need more than effective teachers and evidence-based instructional practices. They also need school environments that support their social, physical, and emotional development – sometimes referred to as a “whole child” approach to education. In a 2018 study, the Learning Policy Institute pointed out that 46 million children in the U.S. are exposed to violence, crime, abuse, homeless, food insecurity, and other adverse experiences that negatively impact learning and behavior. School environments that provide a whole child approach can mitigate the negative effects of adverse experiences and boost achievement for all children. An emerging evidence base points to non-academic supports as a key driver of academic achievement.

Research shows that some dropout and truancy prevention programs positively affect student outcomes. Specifically, individually targeted dropout prevention programs are more effective than those that monitor all students. Similarly, targeted mentoring programs for truancy prevention are more effective than general interventions, and also more effective than alternative school interventions. In addition to using evidence-based approaches, LEAs should also track chronic absences, as frequently missing school – even if excused – negatively impacts students' academic outcomes.

Integrated student supports, which address both academic and non-academic barriers to success, and often combine case management, health and nutrition programs, mentoring, and tutoring, show promise in improving student outcomes. Specifically, there is strong evidence that case management in schools is a cost-beneficial intervention. LEAs, especially those with high percentages of at-risk students, should consider using at-risk formula funding to implement comprehensive support models for students, including case management.

Community schools can increase academic achievement and improve student attendance compared to traditional public schools, and can also reduce disparities in achievement. The community school model combines integrated student supports with extended learning time and robust family and community engagement. LEAs that want to implement a community school model can leverage funding for extended learning time programs, as well as at-risk funding for integrated student supports.

Integrated student supports that address academic and non-academic barriers show promise in improving student outcomes

LEAs, especially those with high percentages of at-risk students, should consider using at-risk formula funding to implement comprehensive support models for students

LEAs that want to implement a community school model can leverage funding for extended learning time programs, as well as at-risk funding for integrated student supports



Table 6. Summary of Non-Academic Support Interventions

Intervention	Evidence of Impact	Benefit to Cost Ratio	Chance Benefits Will Exceed Costs	Expected Change to HS Grad Rate for Target Population	Effect Size on Test Scores	Effect Size on Graduation Rates
Case management in schools	Strong	\$79	96%	5%	0.026	0.109
Dropout prevention	Strong*	<i>Not in RF</i>				
Truancy prevention	Strong*	<i>Not in RF</i>				
Community schools	Strong*	<i>Not in RF</i>				
Integrated student support services	Promising	<i>Not in RF</i>				

* Indicates that program is included in a social policy clearinghouse
 Source: Results First, using New Mexico assumptions

For more detail on non-academic support programs and interventions, see page 44.

Recommendations

PED should:

- Require LEAs to monitor, report on, and address chronic absenteeism, in addition to habitual truancy.
- Require LEAs, as part of approved uses of additional at-risk formula funding, to use evidence-based approaches to address dropout, attendance, and truancy, in order to improve outcomes for low-income and EL students.
- Prioritize budget approval for uses of additional at-risk formula funding for evidence-based integrated student support services, including case management.
- Require LEAs to track and report on spending of at-risk funding.

School districts and charter schools should:

- Consider using Extended Learning Time Program (ELTP) funds, as well as at-risk funding, to implement community school models using evidence-based wraparound services and extended learning time initiatives.



Teaching practices that include targeted student interventions, as well as dual language instruction, are effective in improving student outcomes

In addition to having effective teachers, students also benefit from evidence-based approaches to instruction – both interventions targeted to individual students as well as school-wide programs. Academic interventions combine high-quality, evidence-based instruction with targeted interventions matched to student need.

Both one-on-one and small group tutoring show strong evidence of positive impacts on student achievement. While one-on-one models are often more effective, small group tutoring is likely to be more cost-beneficial. Tutors can be either educators or well-trained volunteers. Structured tutoring is more effective and cost-beneficial than non-structured models.

Dual language education programs – a model in which English is taught alongside a partner language – appear to have academic benefits for both English learners and native English speakers. New Mexico’s bilingualism-biliteracy seal on diplomas of students who meet certain language-related criteria may be a promising model to scale, expanding dual language models to more schools and students.

Culturally responsive instruction – an approach that encourages the use of strategies, content, and materials relevant to students’ diverse cultural, ethnic, and linguistic backgrounds – has not been sufficiently evaluated for its impact on student achievement, but some implementations of culturally responsive practices show promise. Clearer definitions of such practices may be helpful as implementation expands.

While one-on-one tutoring models are typically more effective, small group tutoring is likely to be more cost-beneficial

Table 7. Summary of Teaching and Instructional Practices Interventions

Intervention	Evidence of Impact	Benefit to Cost Ratio	Chance Benefits Will Exceed Costs	Effect Size on Test Scores
Dual language education	Strong	<i>Not in RF</i>		
Tutoring	Strong (depends on model)			
<i>By non-certificated adults, small-group, structured</i>		\$32	78%	0.126
<i>By certificated teachers, small-group, structured</i>		\$15	97%	0.209
<i>By adults, one-on-one, structured</i>		\$7	95%	0.213
<i>By adults, one-on-one, non-structured</i>		\$5	74%	0.061
Culturally responsive instruction/curriculum	Mixed or Inconclusive	<i>Not in RF</i>		

Source: Results First, using New Mexico assumptions



For more detail on teaching and instructional practices interventions, see page 48.

Recommendations

PED should:

- Define culturally responsive teaching practices in rule.

School districts and charter schools should:

- Consider implementing evidence-based dual language programs and encouraging students to obtain bilingualism-biliteracy seals on their diplomas.

College and career readiness programs can positively impact student outcomes, especially when targeted to students less likely to graduate

Successful education systems prepare students for life beyond K–12 schooling, for post-secondary education, career, or both. NCSL’s *No Time to Lose* report identifies college and career readiness for all students as a core feature of high-performing education systems. Nationally, states use different definitions of what it means to be college and career ready, but most definitions include some form of academic content knowledge, critical thinking skills, social and emotional learning, and civic or community involvement. Programs and interventions that aim to prepare students for college and career often include skill training, attainment of college credits, support for applying to college or finding a job, and defined career pathways integrated into school curricula.

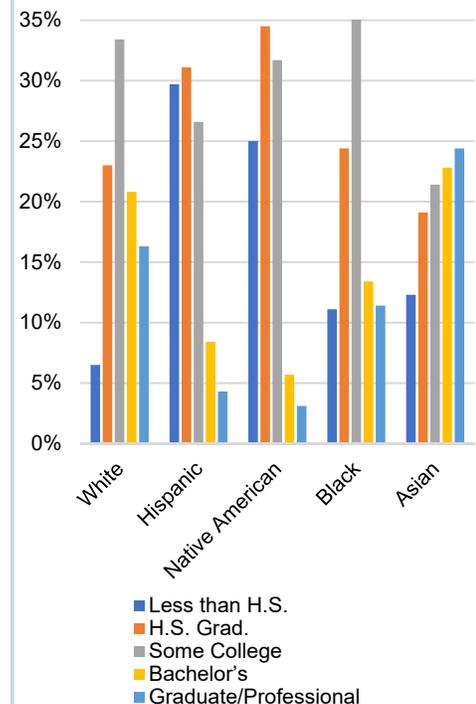
When targeted to students who are less likely to enroll in and graduate from college, or to obtain jobs in high-growth industries, college and career readiness interventions can help close attainment gaps. In New Mexico, there are large disparities in educational attainment, with over one-third of white students earning a bachelor’s degree or higher, compared to 12 percent and 9 percent, respectively, of Hispanic and Native American students (Chart 6).

Strong evidence suggests that both career and technical education (CTE) and dual credit programs can positively impact student achievement. These interventions can raise high school graduation rates and improve college and employment outcomes. CTE programs show the biggest impact for students who complete occupation-specific programs, as well as for males and low-income students. Effective CTE programs should be targeted to high-growth industries and aligned with specific skills and credentials.

While broader implementation of CTE programs is likely beneficial, the state needs a more robust framework for these programs, including defining standards and credentials, and identifying target industries

Dual credit programs can serve as a pathway for students to earn college credit and become college-ready, but evidence from New Mexico suggests that while students who take dual credit courses do have higher graduation rates, these students may have been more likely to graduate, even in the absence of dual credit programs. Similarly, students who successfully complete Advanced Placement coursework have better school outcomes, but these outcomes are likely a factor of other school and student characteristics.

Chart 6. New Mexico Educational Attainment by Ethnicity, 2009



Source: US Census Bureau, American Community Survey 2009, S0201 Selected Population Profile

While broader implementation of CTE programs is likely beneficial, the state needs a more robust framework and standards for programs



Table 8. Summary of College and Career Readiness Interventions

Intervention	Evidence of Positive Impact	Benefit-to-Cost-Ratio	Chance Benefits Will Exceed Cost
Career and Technical Education (CTE)	Strong*		<i>Not in RF</i>
Dual credit programs	Strong*		<i>Not in RF</i>
Advanced Placement	Mixed or Inconclusive		<i>Not in RF</i>

* Indicates that program is included in a social policy clearinghouse
 Source: Results First, using New Mexico assumptions

For more detail on college and career readiness interventions, see page 52.

Recommendations

Legislative agencies should:

- Study potential CTE policies for the state and assess the feasibility of creating a statewide framework for CTE, including statewide standards and requirements for programs, career pathways, and agreements with employers.



Class size reduction can have modest positive effects on student outcomes in early grades, but is less cost-beneficial in later grades

The goal of class size reduction efforts is typically to increase the amount of individualized interactions between a student and his or her teacher. Class size reduction is often popular with policymakers, teachers, and parents – teachers may believe that smaller classes are easier to manage and parents may like the idea of greater attention for each student. A 2011 brief from the Brookings Institution found that nationally, average pupil-to-teacher ratios (which are typically lower than average class size-to-teacher ratios) have decreased by about 30 percent since 1970.

Evidence suggests that smaller class sizes can improve academic outcomes, especially in kindergarten or first grade. For children who were in large kindergarten classes, a small first grade class can modestly improve outcomes. Reductions seem to especially benefit students who struggle in school, low-income students, and minority students, and smaller classes have smaller achievement gaps than larger classes. Analysis suggests that positive effects are greater when teachers adopt – and when professional development supports – practices that take advantage of smaller class sizes, like increasing individual student interventions and interactions.

However, class size reductions typically have small effect sizes, and while small classes, between 15-19 students, appear to be most effective, there is little difference in outcomes for classes between 20 and 40 students. While students who are in smaller classrooms during early grades have a small advantage over their peers in later grades, the strategy, overall, is likely not a very cost-effective way to improve outcomes. Research suggests that other interventions can improve achievement more cost effectively than class size reduction, which tends to be costly. For example, the Education Commission for the States points to tutoring as a more cost-effective intervention, likely because it targets increased educator attention to students who need it most. Estimates from the Results First model support this assertion. The estimated benefit-to-cost ratio of reducing average kindergarten class size in New Mexico is over \$11:1, but this ratio drops in later grades, and the benefit for reducing class size in a grade between 9-12 is less than \$2:1 (Table 9).

Research suggests that other interventions can improve achievement more cost effectively than class size reduction, which tends to be costly

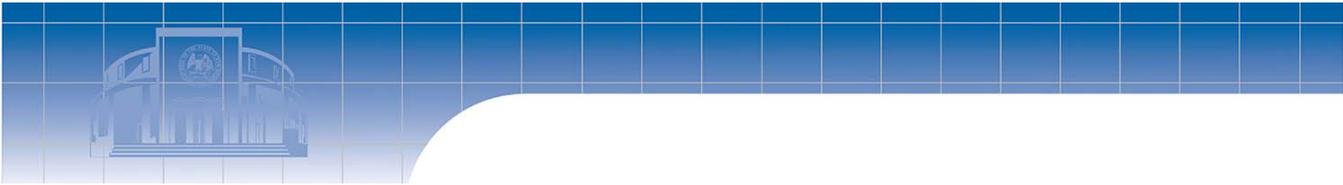


Table 9. Summary of Class Size Reduction Interventions

Intervention	Evidence of Positive Impact	Benefit-to-Cost Ratio	Chance Benefits Will Exceed Cost	Effect Size on Test Scores	Effect Size on Graduation Rates
Class size reduction	Strong*				
<i>Reducing average class size by one student in kindergarten</i>		\$11	99%	0.052	0.018
<i>Reducing average class size by one student in grade 1</i>		\$7	93%	0.027	0.010
<i>Reducing average class size by one student in grade 2</i>		\$4	78%	0.014	0.006
<i>Reducing average class size by one student in grade 3</i>		\$3	69%	0.010	0.004
<i>Reducing average class size by one student in one grade, 4-6</i>		\$2	62%	0.007	0.003
<i>Reducing average class size by one student in one grade, 7-8</i>		\$2	59%	0.004	0.002
<i>Reducing average class size by one student in one grade, 9-12</i>		\$2	53%	0.004	0.003

* Indicates that program is included in a social policy clearinghouse
 Source: Results First, using New Mexico assumptions

Table 10. Average Class Size by School Level, SY14

Elementary School	17
Middle School/Junior High	20
High School	18
Overall	18

Source: PED Class Roster, 2013-2014
 Note: Does not include elective classes. Classes with only 1 student were excluded from data

While Albuquerque Public Schools operates under a negotiated agreement that allows for class sizes to exceed statutory limits, the agreement only permits elementary school class loads of one additional student over the limit

The average class size in New Mexico was 18.2 students in FY14.

Based on the latest data made available by PED, class size varied somewhat by school level (Table 10). Across districts, average size ranged from 23 to less than 4. Average class size is correlated with district size, with smaller districts more likely to have smaller classes. School districts with fewer than 200 students have an average class size of just 7.6 students.

Average class sizes in New Mexico appear to be below national averages. National Center for Education Statistics from 2012 indicated that the average elementary school class size was 21, and the average secondary school class size was 27.

New Mexico has class size (or “class load”) requirements in statute (Section 22-10A-20 NMSA 1978). The average class load for teachers at an individual school cannot exceed 20 students for kindergarten teachers (teachers are entitled to an educational assistant for classes of 15-20 students), 22 students for grades 1-3 teachers, and 24 students for grades 4-6 teachers. Based on class size data made available to LFC, from SY14, it is not clear how many schools exceed class load requirements; however, it does not appear to be a high number. Class sizes are more likely to be bigger, and potentially exceed requirements, in larger districts. While Albuquerque Public Schools operates under a negotiated agreement that allows for class sizes to exceed statutory limits, the agreement only permits elementary school class loads of one additional student over the limit.

Schools can receive waivers in certain circumstances – if there are no portable classrooms available, no available funding for additional classrooms, and if the LEA has a plan to increase capacity within one year – to exceed these limits. Based on information from PED, in FY16, 11 districts applied for waivers for a total of 18 schools. All waivers were approved. Statute stipulates that waivers “shall not be granted for more than two consecutive years.”



However, some schools have received blanket, or recurring, waivers under a temporary provision expiring this year (Laws 2016, Section 22-1-10).

Recommendations

The Legislature should consider:

- Not renewing the blanket class size waiver provision that expires this year.

PED should:

- Provide LFC with class roster data for the first reporting period of FY19.
- Identify schools exceeding class size caps and work with them to achieve compliance.
- Develop and routinely report to the Legislature, as part of the public schools budget request, information on class sizes and waivers granted.
- Work with schools through the budget process to eliminate the need for waivers.



Charter schools do not have a consistent impact on student achievement, compared to non-charter public schools

Charter schools are public schools governed by a contract with a state or local jurisdiction, and are exempt from some state and local education regulations. While they are able to operate with a greater degree of autonomy and flexibility than traditional public schools, they must still meet accountability standards.

Research on charter schools shows they do not have a clear impact on student outcomes. Review of evidence from the Washington State Institute for Public Policy (WSIPP) found that effects are mixed, with some charter schools performing better on student achievement measures than traditional public schools, and others performing worse. WSIPP concluded that charter schools, as a group, do not have a consistent impact on test scores. Since specific charter school characteristics – such as curricula, teacher quality, instructional model, or schedules – typically aren’t measured across studies, it is difficult to know which characteristics are associated with positive outcomes. However, WSIPP found that overall, charter schools in urban areas have more consistent positive effects than charter schools in non-urban areas. Some studies suggest that economically disadvantaged students experience the biggest benefit from attending charter schools, and charter schools in urban areas are more likely to serve these students than schools in non-urban areas.

Some charter school models have been found to have positive effects on student achievement. For example, WSIPP reviewed studies of schools in the Knowledge is Power Program (KIPP), a network of charter schools serving over 40 thousand students nationwide. Evidence suggests that KIPP schools improve reading and math test scores more consistently than charter schools in general.

Results First shows an expected benefit-to-cost ratio of approximately \$1:1 for charter schools overall, meaning that the expected benefits are neutral, compared to non-charter public schools. However, when benefits and costs of urban and non-urban charter schools are examined separately, urban charter schools show an expected positive benefit-to-cost ratio, while non-urban charter schools have a benefit-to-cost ratio of less than \$1:1 (Table 11).

Table 11. Summary of Charter School Interventions

Intervention	Evidence of Positive Impact	Benefit-to-Cost Ratio	Chance Benefits Will Exceed Costs	Effect Size on Test Scores
Charter schools (overall impact)	Mixed or Inconclusive*	\$1	55%	0.013
Urban charter schools		\$5	94%	0.044
Non-urban charter schools		<\$1	45%	0.011

Source: Results First model, using New Mexico assumptions

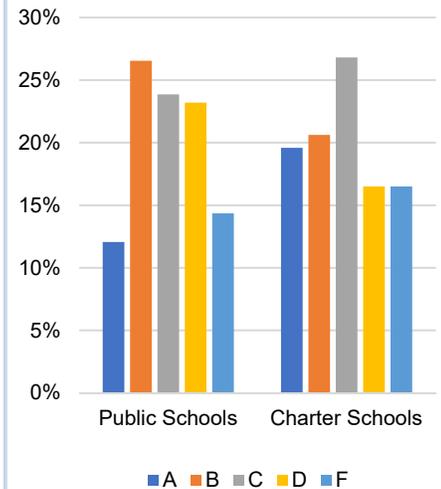
Overall, charter schools in urban areas have more consistent positive effects than those in non-urban areas



On average, New Mexico charter schools do not differ significantly from district schools in student achievement. In 2018, there were 97 charter schools in the state, consisting of 41 locally-chartered schools and 56 state charters, making up approximately 7 percent of total student enrollment. Student achievement is comparable between district and charter schools. In FY18, average reading proficiency rates were 42 percent for both school districts and charter schools. Math proficiency rates were 22 and 20 percent, respectively, for school districts and charter schools. In 2018, charter schools received a higher proportion of ‘A’ grades than district schools, but also a slightly higher proportion of ‘F’ grades (Chart 7).

In 2016, an LFC evaluation found that charter schools serve a lower percentage of Hispanic, economically disadvantaged, and EL students, compared to district schools.

Chart 7. School Grades by LEA Type, 2018



Source: PED school grades, 2018





Review of Programs and Interventions: Descriptions and Experience in New Mexico

Teacher Quality – Overview of Programs and Interventions

Strong evidence. Some professional development has a significant impact on student outcomes, with the most effective programs using job-embedded, content-focused models. Research consistently finds that professional development – or structured professional learning for teachers – has a greater impact on student outcomes than most other variables influencing teacher quality. Since there is a multitude of approaches to professional development that take place throughout a teacher’s career, it is important to identify the most effective models.

Job-embedded professional development. Ongoing professional development that provides teachers with opportunities to apply and receive feedback on new teaching practices, spread over six to 12 months, can boost student achievement.

Content-based professional development. Professional development that helps teachers learn about and analyze skills, concepts, and knowledge specific to their discipline is more effective than learning about generic teaching-related topics or skills.

Mentoring/induction for new teachers. Students of beginning teachers who participated in some kind of induction had higher academic achievement gains. While induction can include a range of activities, such as workshops, classroom assistance, and collaborative sessions, teacher mentoring is the most common type of induction, and the two terms are often used interchangeably. Since the content, duration, and delivery of induction programs vary widely, it is difficult to draw conclusions about the effects of any specific induction programs.

Training teachers on using student data to guide instruction. Professional development that helps teachers learn how to use student academic data to modify and improve instruction has been shown to positively impact student outcomes.

One-off workshops and conferences that are not closely connected to teachers’ classroom practices are generally not effective, but nationally, over 90 percent of teachers participate in this kind of professional development, while less than half received sustained professional development, mentoring, or coaching.

Similarly, estimates from Results First indicate that targeted, content-based professional development has a positive benefit-to-cost ratio, while non-targeted programs do not appear to be cost beneficial. Professional development that trains teachers to use student academic assessment data to modify and improve instruction is the most cost beneficial of the models examined by Results First (Table 12).

Table 12. Expected Benefit-to-Cost Ratios of Teacher Professional Development Interventions

Intervention	Benefit-to-Cost Ratio	Chance Benefits Will Exceed Costs	Effect Size on Test Scores
Use of data to guide instruction	\$132	98%	0.117
Targeted	\$38	79%	0.071
Online, targeted	\$9	61%	0.020
Teacher induction/mentoring	\$6	60%	0.046
Not targeted	\$0	38%	0.000

Source: Results First model, using New Mexico assumptions



Echoing these themes, a 2017 Learning Policy Institute review of studies on professional development programs found seven common features of effective professional development (see Figure 4).

Professional development programs must also be of sustained duration to be effective. A review by the Institute for Education Sciences found that programs with substantial professional development – an average of 49 hours annually – boosted students’ achievement. Programs with fewer than 14 hours of professional development had no statistically significant effects on student achievement.

In New Mexico, design and implementation of professional development varies widely by school and district. PED provides limited guidance on the amount, structure, or content of professional development, and while statute (Section 22-10A-19.1 NMSA 1978) requires the department to develop a framework for professional development, the framework has not been updated since 2004. The framework requires that programs receiving funding adhere to standards from the National Staff Development Council, an educator professional development association (now called Learning Forward). The standards do not specifically refer to evidence-based practices. Given a lack of common standards or guidance for professional development, it is likely that there is wide variation in quality and effectiveness across schools and districts.

Statute also requires that PED develop a framework for teacher mentorship for level 1 teachers and approve LEAs’ mentorship programs (Section 22-10A-9 NMSA 1978). PED does not currently collect information on district mentorship programs.

One statewide professional development program is Teachers Pursuing Excellence (TPE), a two-year program aimed at improving teacher performance as measured by NMTEACH, through targeted mentorship and support by highly effective teachers for minimally effective and ineffective teachers. TPE is modeled after elements of the University of Virginia School Turnaround Program. The TPE program received \$2 million in recurring general fund appropriations in FY18. According to PED, students of TPE teachers experience more growth in English and math than the state average.

On average, school district teachers receive seven non-instructional days (or days when teachers are on site without students), while charter school teachers receive nearly 14. LEAs use these days for a number of teacher professional development and other activities, including training on specific skills or use of new systems, preparation and planning (e.g. for the start of the school year), and administrative tasks.

Strong evidence. Coaching by experienced teachers can improve teaching practice and lead to better outcomes. Providing teachers with ongoing, active coaching – not just passive observation – from experienced or master teachers (sometimes called consultant teachers) has been shown to improve student outcomes. Coaches may also serve as

Figure 4. Features of Effective Professional Development

- They are content focused.
- They incorporate active learning strategies.
- They engage teachers in collaboration.
- They use models and/or modeling of effective practices.
- They provide coaching and expert support.
- They include opportunities for feedback and reflection.
- They are of sustained duration.

Source: Learning Policy Institute, *Effective Teacher Professional Development*, 2017

Figure 5. Literacy Coaching as a Model to Improve Student Reading Proficiency

Model: Literacy coaches support classroom teachers, providing ongoing training to help teachers improve their reading instruction skills.

Outcomes: There is promising evidence that reading and literacy coaches improve students’ reading skills. A 2010 longitudinal study examined the effects of a literacy collaborative model that relied primarily on one-on-one teaching coaching for grades K-2. The study found moderate positive growth in reading proficiency in years one and two, and strong positive growth in year three. The benefits persisted through subsequent summers. Another meta-analysis on literacy coaching found that coaching positively affects both teaching practice and student achievement, also finding that literacy coaching was most effective when paired with other forms of professional development, such as group training.

The use of reading and literacy coaches should be focused on prekindergarten through the third grade, the period when most students learn how to read. The National Reading Technical Assistance Center recommends that reading coaches be credentialed.

Sources: *Assessing the Value-Added Effects of Literacy Collaborative Professional Development on Student Learning*, The Elementary School Journal, 2010; *Meta-Analysis Reveals Coaching’s Positive Impact on Instruction and Achievement*, 2016, Learning Forward

classroom teachers or may be full-time coaches. Coaching is typically individualized, time-intensive, and focused on concrete skills. Of several coaching models, Results First estimates that while general coaching has a relatively high benefit-to-cost ratio of \$28:1, content-focused coaching that is focused on specific skills, and also provides more time for coaching, is significantly more cost-beneficial (Table 13). See Figure 5 for more detail on literacy collaborative coaching, a model that makes coaches available to provide professional development and one-on-one interventions with classroom teachers with a focus on specific literacy-related instructional strategies.

Table 13. Expected Benefit-to-Cost Ratios of Teacher Coaching Interventions

Intervention	Benefit-to-Cost Ratio	Chance Benefits Will Exceed Costs	Effect Size on Test Scores
Content-focused coaching	\$190	94%	0.107
Online coaching	\$93	92%	0.082
Literacy collaborative coaching	\$32	99%	0.428
Coaching	\$28	81%	0.060

Source: Results First model, using New Mexico assumptions

Strong evidence. Teaching experience is positively associated with student achievement, with the biggest gains in early years of teaching. A 2016 research review from the Learning Policy Institute concluded that teaching experience is positively and significantly associated with teacher effectiveness, also finding that teachers improve at higher rates during the early years of teaching, but continue to improve throughout their careers. The National Bureau of Economic Research found that the benefits of experience peak between 21 and 27 years of teaching. A 2010 study from the Center for Analysis of Longitudinal Data in Education Research found that the effect of teacher experience is stronger than the effects of most other observable teacher characteristics, including licensure test scores, National Board Certification, and class size. The same study also found that effects of teacher experience are stronger at the elementary and middle school levels.

Results First finds an expected benefit-to-cost ratio of \$13:1, based on the difference between a teacher with one year of experience and a teacher with five years of experience (Table 14).

Table 14. Expected Benefit-to-Cost Ratio of More Experienced Teachers

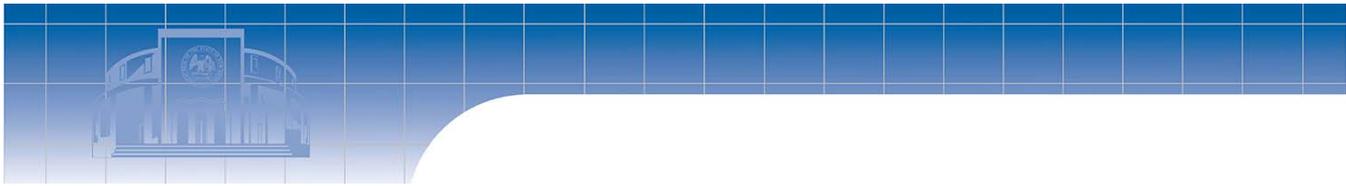
Intervention	Benefit-to-Cost Ratio	Chance Benefits Will Exceed Costs	Effect Size on Test Scores
Teacher experience (difference between 1 year and 5 years of experience)	\$13	99%	0.058

Source: Results First model, using New Mexico assumptions

Teacher experience also has positive effects on non-achievement outcomes, including absences and disciplinary offenses, as well as positive spillover effects on less-experienced colleagues. However, while teachers, on average, become more effective over time, they make greater gains when they teach in a supportive working environment, and when they are able to accumulate experience in the same grade level, subject, or district.

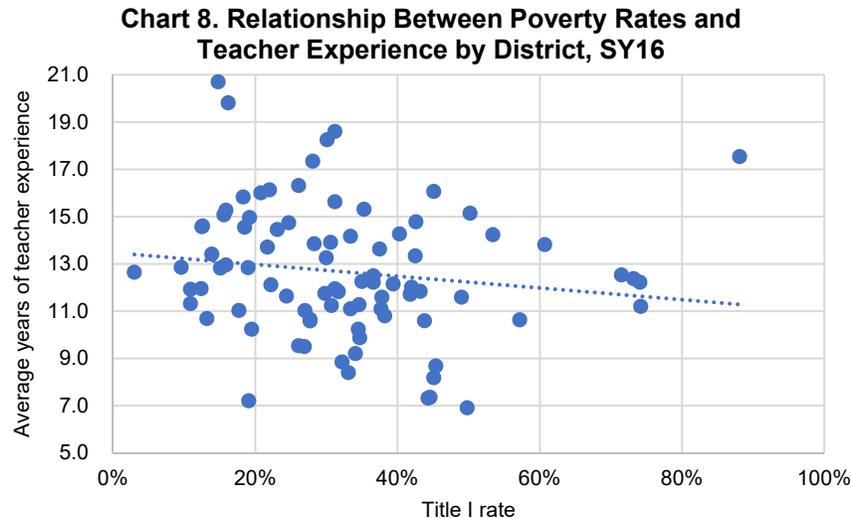
Experienced teachers are often not equitably distributed. Research from the U.S. Department of Education found that minority students, as well as English learners, were three to four times more likely to attend schools with higher concentrations of first-year teachers than white students. Students in the highest-poverty schools were 50 percent more likely to have a teacher with fewer than four years of experience than students in the lowest-poverty schools.

The teacher compensation system in New Mexico uses experience as one factor in determining pay. Most school districts determine teacher pay based on a single salary schedule based on years of service and education attainment, incentivizing educational attainment and longevity. The three-tiered licensure system requires teachers to teach for at least three years on a level 1 license to advance to level 2, and then another three years to advance to level 3. On average, teachers make \$527 more in annual salary for each additional year of experience



up to 30 years. However, there is considerable variation between districts. In some districts, salaries only increase \$1 each year based on the local salary schedule.

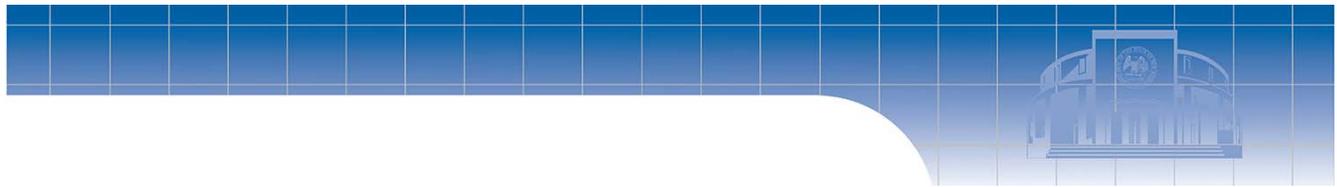
Echoing national trends, there is some evidence that students in higher poverty districts in New Mexico are more likely to have less experienced teachers (Chart 8). Districts in the highest quartile of Title I rates (an indicator of poverty) had an average teacher tenure of 11.8 years, compared to 13.5 years for districts in the lowest quartile of Title I rates.



Source: LFC analysis of PED data

There is also evidence that the teacher workforce is becoming less experienced. Returning teachers in FY18 had 1.4 fewer years of experience on average, compared to teachers three years prior, and the overall number of returning teachers has declined by 6 percent since 2016.

Strong evidence. Teacher performance pay has a modest effect on student outcomes, and can also reduce teacher attrition rates. Teacher performance pay programs, also called incentive pay, merit pay, or performance bonuses, provide increased compensation to teachers who meet certain performance criteria, often related to student test scores or teacher evaluations. Proponents of performance pay argue that traditional pay structures based on degree attainment and seniority may not adequately compensate high-performing teachers nor motivate performance. In theory, merit pay rewards outcomes, rather than inputs, while allowing teachers flexibility in attaining favorable outcomes. Performance pay aims to both motivate teachers, as well as attract and retain high performers over time.



A 2017 meta-analysis concluded that performance pay programs are associated with a modest, statistically significant positive effect on student test scores. The analysis also found that effects are sensitive to program design, but analysis of specific features, such as the amount of pay, the criteria, and program lengths, has not been well evaluated. A seven-year study of the federal Teacher Incentive Fund (TIF), which provided over \$2 billion in grants to support performance-based teacher compensation, also found modest improvements in student achievement on standardized tests at schools that offered pay-for-performance bonuses, compared to schools that did not. On average, student achievement was one to two percentile points higher in reading and math at schools that offered bonuses, the equivalent of three to four weeks of learning.

The TIF study stresses that in order for a bonus program to be effective, educators must understand key components of the program and know how to change their practices in ways that improve student outcomes. See Figure 6 for guidance from the program on how to structure bonuses. The TIF program identified professional development as part of the theory of change by which bonuses affect student outcomes, and schools implementing bonus programs were required to offer professional development to help educators understand the evaluation process, provide feedback on performance, and share information on how to improve instructional practices. It is not clear how much professional development contributed to student achievement effects, and the study found inconsistent implementation of this program component across schools.

Results First estimates an expected \$22:1 benefit-to-cost ratio of teacher performance pay (Table 15). While the benefit-to-cost ratio is relatively high, it is important to note that the overall effects of performance pay are relatively small. The 2017 meta-analysis found an effect size that was roughly equivalent to four additional weeks of learning.

Figure 6. Teacher Incentive Fund (TIF) Guidance on Structure of Pay-for-Performance Bonuses

Bonuses should be:

- *Substantial* – worth at least five percent of the average educator’s salary
- *Differentiated* – at least some educators should receive bonuses worth three times the average bonus
- *Challenging to earn* – only educators performing significantly better than average should receive bonuses

Source: U.S. Department of Education, TIF program

Table 15. Expected Benefit-to-Cost Ratio of Teacher Performance Pay

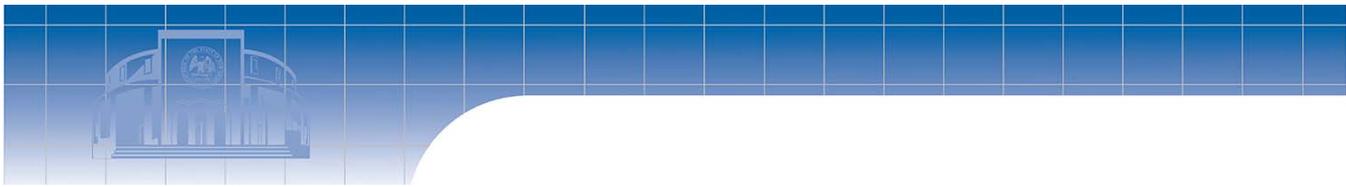
Intervention	Benefit-to-Cost Ratio	Chance Benefits Will Exceed Costs	Effect Size on Test Scores
Teacher performance pay	\$22	87%	0.019

Source: Results First model, using New Mexico assumptions

In addition to effects on student achievement, performance pay programs may also have effects on workforce composition by recruiting and retaining more effective teachers over time. A 2014 study of Denver’s educator performance pay system (ProComp) found that teachers who received performance pay had a significantly lower likelihood of leaving the school district.

However, a performance pay program will only be as effective as the system used to define and measure “merit.” Critics of such programs argue that it is difficult to create a process to measure performance and identify effective teachers, and that clear definitions of what constitutes good outcomes are often lacking. Thus, design of a performance pay program must clearly define what outcomes or teacher characteristics the system wants to incentivize, and ensure that any evaluation system is able to reliably measure these.

New Mexico offers performance pay primarily through Excellence in Teaching awards, which are tied to the NMTEACH evaluation system. Teachers rated exemplary receive one-time awards of \$5,000, with an additional \$5,000 for math and science teachers, as well as teachers in schools identified as more rigorous intervention (MRI) schools. Teachers must have at least three years of prior student achievement data to be eligible. In FY18, 5.7 percent of teachers were rated exemplary. In 2018, the Legislature appropriated \$5 million in



nonrecurring funds for awards; however, PED disbursed approximately \$6.4 million statewide, due to an increase in teachers rated exemplary.²

There is no available information yet about program outcomes – for example, whether teachers who received an award had better student outcomes, or whether awards increased teacher retention.

Strong evidence. Incentives for hard-to-staff schools or districts can improve student outcomes; research on subject-focused bonuses is less clear. Some districts and states provide bonuses, or other types of financial incentives, for teachers in areas – either geographic or subject matter – that are more difficult to staff.

Evidence points to positive effects on student outcomes from geographically-targeted financial incentives. For example, the Talent Transfer Initiative (TTI) provides bonuses – \$20,000 over two years – for high-performing teachers to move into schools serving disadvantaged students, and is being implemented in 10 school districts in seven states. A randomized experiment that tested the effect of the bonuses found a positive impact on math and reading test scores in targeted elementary classrooms, but not in middle school classrooms. However, the combined effects were still positive and statistically significant.

Evidence also shows that providing financial incentives can substantially reduce teacher attrition in high-need subject areas. A study of a long-running incentive program in Florida, which provided one-time bonuses to teachers in high-need subject areas, as well as partial loan repayment, found that both types of incentives substantially reduced teacher attrition in these areas. The bonuses had a greater impact than comparable sized loan repayments, reducing attrition of first-year teachers by nearly one third. The study did not specifically measure the impact of the program on student outcomes, but it found that teachers who received financial incentives were as good or better, in terms of quality, as those who did not receive incentives.

New Mexico offers loan repayment and loan-for-service programs, but program outcomes are unclear. The loan repayment program offers up to \$12,000 for current teachers who teach in a subject area designated as a shortage area, and who also teach in a D or F school. Designated subject areas include bilingual education, reading specialist, prekindergarten, and STEM. Teachers must serve for at least two years after receiving the loan award. The loan-for-service program offers awards of up to \$4,000 per year, up to \$20,000 total, for students enrolled in a teacher preparation program. Would-be teachers who receive awards must teach in a shortage area for at least two years. Program expenditures in FY19 were \$63,000 for the combined programs.

² The additional funding for teaching awards was reallocated from appropriations for the Interventions and Support for Students, Teachers, Struggling Schools, and Parents line-item initiative, as LEAs did not request reimbursements for the full \$4 million originally appropriated for that initiative.

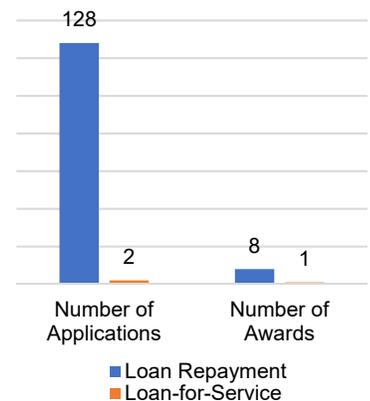


Only a very small number of teachers and would-be teachers have received awards through the programs. In FY19, eight individuals received a loan repayment award, and just one received a loan-for-service award (Chart 9). An LESC brief reported that almost half of loan-for-service awardees have defaulted.

The Higher Education Department (HED), which administers the programs, does not track employment outcomes for program participants, so it is difficult to know whether the programs are achieving their stated goals of addressing New Mexico’s teacher shortage and increasing the number of teachers in designated high-risk positions. There is no incentive for teachers to continue teaching beyond the two-year commitment. Further, the stated criteria for award funding does not include any measure of teacher effectiveness, so the program may not be incentivizing the most effective teachers to enter and remain in the profession.

New Mexico has also previously offered recruitment bonuses for hard-to-staff subjects. From FY16 to FY18, LEAs could apply for funding to provide bonuses of \$5,000, \$7,000, and \$10,000 for hard-to-staff positions, including STEM, bilingual, and special education positions, as well as others specific to local needs. In FY18, the program received \$1 million in general fund appropriations and 31 districts and 20 charter schools applied for funding for 760 FTE teachers.

Chart 9. Applications and Awards for Teacher Loan Forgiveness Programs, FY19



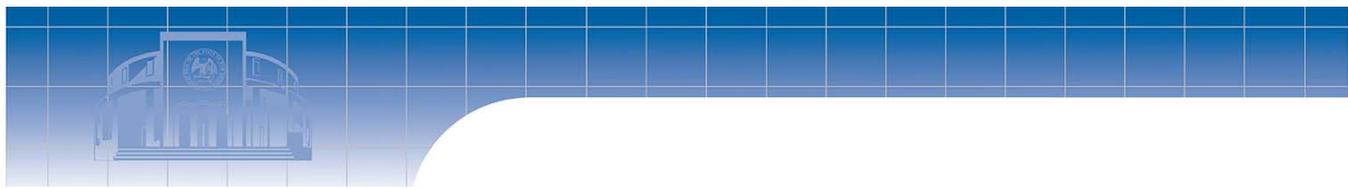
Source: HED Presentation to LESC, November 15, 2018

Promising evidence. Teacher residency programs have not been rigorously evaluated, but research suggests they may result in more effective teachers and better student outcomes over time. Teacher residency programs (TRPs) are modeled on medical residencies and combine coursework in education with extensive on-the-job training. Typically, residents complete at least one year of teaching, alongside an experienced mentor teacher, receiving feedback and coaching, while also completing coursework. Often, a cohort of residents attends classes and workshops as a group, learning from each other.

Since TRPs are a relatively new concept, there is limited data or rigorous research on their impact on student achievement. Initial research shows some mixed but promising findings. A study of the Memphis Teacher Residency Program found that residency graduates had higher student achievement gains than other beginning teachers and larger gains than veteran teachers on most standardized tests. A 2012 evaluation of a TRP in Boston concluded that residency alumni teacher effectiveness increases over time, with alumni teachers outperforming non-alumni teachers by their fifth years of teaching. However, preliminary findings from an American Institutes of Research evaluation of Denver school district’s TRP were inconclusive, with students taught by teachers that had participated in the TRP scoring slightly lower in mathematics than a comparison group. There were no differences in reading achievement. Teachers from both the Boston and Denver TRPs were more likely to remain teaching in their districts over time.

The Learning Policy Institute points to several characteristics of successful TRPs. Programs should establish a strong partnership between a district and university, develop a tightly integrated curriculum, place residents in classrooms and schools that model strong practices, provide adequate financial assistance for candidates, and offer ongoing mentoring for residents as they move into their own classrooms.

A new teacher residency program could be a model for the state; outcomes should be tracked. In 2017, Albuquerque Public Schools (APS) and the University of New Mexico (UNM) partnered to implement a TRP for teacher candidates who are working towards a master’s degree. The organizations received a grant from the National Center for Teacher Residences to take part in a two-year new site development program. The TRP includes a cohort of 24 teachers across three APS schools in a high-need area. Participants take classes during the summer, and receive intensive training and support from experienced teachers during the school year. They also receive a



\$20,000 stipend for the one-year program, reducing the need to seek other work. Because the program is new, there is no information yet on outcomes such as teacher effectiveness or retention over time.

Other residency models in the state have focused on principal preparation. The New and Aspiring Principals Support (NAPS) program (previously called the Alliance of Leading and Learning) is a partnership between APS and UNM that combines a semester-long residency program with integrated coursework to support leadership development. NAPS reported that 57 of 87 participants attained principal or assistant principal positions following completion of the program.

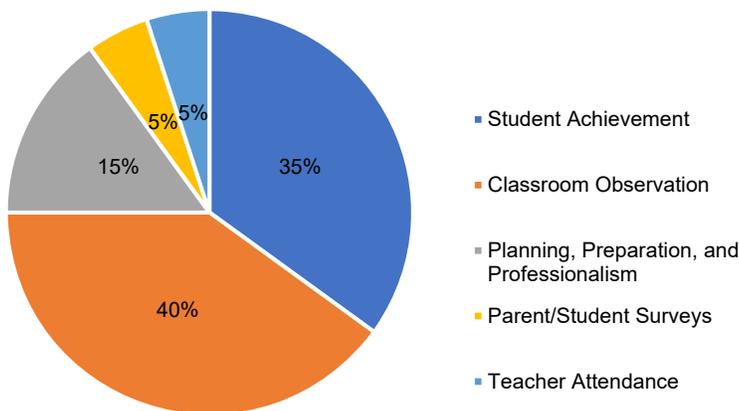
Promising evidence. Well-designed teacher evaluation systems may be able to improve student outcomes. Research shows that well-designed teacher evaluation systems appear to produce scores that are closely correlated with student achievement. However, while this suggests that some evaluation systems are able to identify effective teaching practices, it is less clear whether evaluation systems have a causal impact on student achievement outcomes.

Some research suggests that well-designed teacher evaluation systems can improve student achievement. An experimental study of a new evaluation system in Chicago Public Schools – the Danielson Framework, based on classroom observation and principal-teacher conferences – found that schools that were randomly assigned to implement the system saw statistically significant gains in student reading achievement.

Evaluation approaches that appear to identify and improve teacher effectiveness are those that use systematic teacher observation based on classroom practices, teacher interviews, and portfolios including lesson plans, assignments, and examples of student work. Peer evaluation has also been shown to be effective. Effective teacher evaluation should also incorporate coaching, mentoring, and other interventions that help teachers identify areas for improvement and receive support to improve teaching practices.

The share of teachers rated highly on New Mexico’s teacher evaluation system has increased, but does not necessarily indicate better outcomes. The state’s evaluation system, NMTEACH, uses measures including student achievement, classroom observation, and planning and preparation to rate teacher performance (Chart 10). Rating levels are ineffective, minimally effective, effective, highly effective, and exemplary. The system establishes improvement areas for teachers and principals, and is integrated into other areas, such as licensure and professional development opportunities. NMTEACH received \$1 million in recurring general fund appropriations in FY19.

Chart 10. Components of NMTEACH Scores by Weight



Source: PED 2017-2018 NMTEACH Summative Reports Administrator and Teacher Resources

In a September 2018 press release, PED announced that the number of teachers earning highly effective or exemplary ratings increased by over 1,000 since 2015, with the number of minimally effective and ineffective teachers decreasing by the same number. It is not clear how much of this shift may be due to changes in how LEAs are evaluating teachers. PED also announced that since implementing the evaluation system, 11,000 and 13,000 thousand more students, respectively, demonstrated proficiency in math and

reading. Without further rigorous analysis, it is not possible to attribute these gains to the implementation of NMTEACH.

No evidence of effect. Teachers that have advanced degrees do not appear to have meaningfully better student outcomes. Most research finds that teacher graduate degrees have no consistent relationship with student achievement. For example, 2017 research from the Midwestern Higher Education Compact found that primary, middle, and junior high school teachers with a master’s degree do not have a larger effect on student reading achievement, relative to teachers with only a bachelor’s degree. A decade-long study in North Carolina concluded that teachers who entered the profession with a master's degree, or earned one within five years of beginning to teach, were as effective as teachers without a master's degree. Teachers who earned a master's degree more than five years after they started teaching were less effective than those without master's degrees. Despite this, advanced degrees are often required for full certification, and over half of teachers nationwide have a master’s degree or higher.

Results First finds no expected benefits from having a teacher with a graduate degree (Table 16). However, this does not mean that graduate degrees for teachers are not beneficial. The North Carolina study found that students of teachers with advanced degrees have lower absentee rates. Receiving an advanced degree may also provide a level of challenge and intellectual and personal growth that encourages teachers to remain in the profession longer than they otherwise would, or take on new roles and responsibilities, such as coaching or administration. Thus, there may be valid reasons to incentivize earning of advanced degrees, but not for reasons of expected gains in student achievement.

Table 16. Expected Benefit-to-Cost Ratio of Teacher Graduate Degrees

Intervention	Benefit-to-Cost Ratio	Chance Benefits Will Exceed Cost	Effect Size on Test Scores
Teacher graduate degrees	\$0	7%	0.000

Source: Results First model, using New Mexico assumptions

New Mexico incentivizes advanced degrees through its licensure system. Forty-two percent of licensed teachers in the state had an advanced degree in SY16.³ A master’s degree is required for level 3 licensure; however, teachers who obtain a National Board certification can advance without a master’s degree. Teachers with a master’s degree or higher made, on average, 18 percent higher salaries in SY16 than those without.

There appears to be some relationship between teacher degrees and NMTEACH ratings. In SY16, 57 percent of teachers rated exemplary had a master’s degree or higher, compared to 38 percent of teachers rated ineffective (Chart 11).

³ Includes master’s degree, education specialist degree, and doctorate.

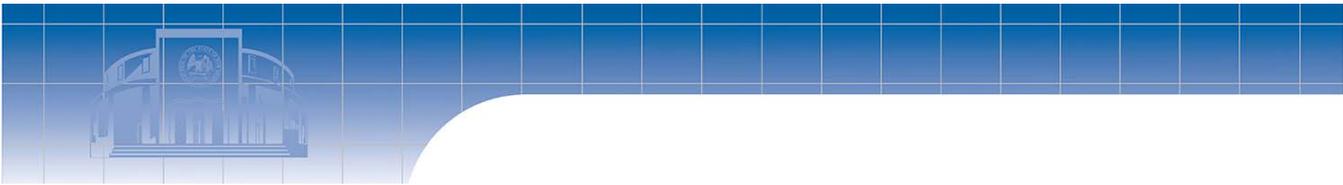
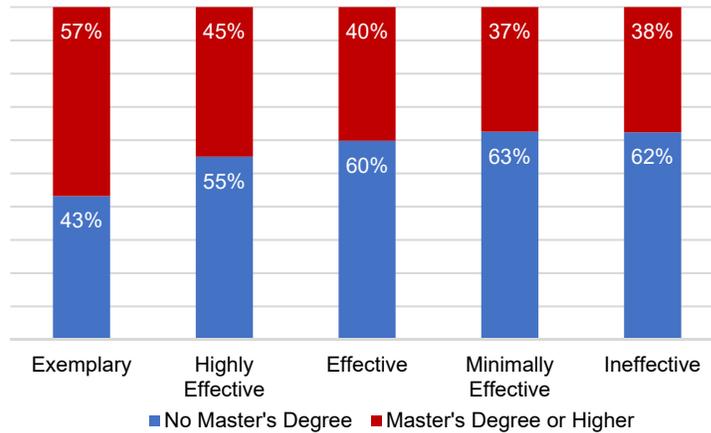


Chart 11. Share of Teachers with Master's Degree or Higher by Effectiveness Rating, SY16



Source: LFC analysis of PED data

Mixed/inconclusive evidence. Grow-your-own programs have not been evaluated well enough to draw conclusions about their effectiveness. Grow-your-own programs aim to develop local candidates to obtain teaching credentials, often as a means of addressing teacher shortages. Many programs target high school students, but some also target mid-career professionals or educational para-professionals who want to make a career change. Programs typically provide classes and training, as well as mentorship, to candidates as they gain credentials and enter the classroom. Some also provide financial assistance. Programs targeting high-school students offer structured support to interested students, including mentoring, networking, and help in entering a post-secondary program. Many programs also have a goal of increasing the diversity of teaching staff, recruiting individuals of color who are interested in becoming teachers.

Research on the effect of grow-your-own programs on teacher recruitment is limited, and there is no rigorous research on the effect of the programs on student achievement. Several programs have seen success in retaining participants as teachers. For example, a program in Broward County, Florida, prepared 360 teacher interns over six years, with a retention rate of 90 percent. However, some programs have been less successful. Illinois spent over \$20 million over ten years to develop 1,000 new teachers for its public schools, but the program produced just 102 college graduates, with hundreds of candidates dropping out of teacher preparation programs. Some of the failure of the program is attributed to inclusion of poorly prepared candidates who were not properly screened prior to program entry.

New Mexico has a statewide branch of the national Educators Rising program, a high school-based program to address teacher shortages. Educators Rising offers education coursework and opportunities to gain experience in a classroom, with the goal of motivating and preparing students to pursue a degree, and eventual career, in education. The program has operated since 2015 in New Mexico, with a head office at NMSU. In a presentation to the LESC, program representatives reported that there were at least 42 active chapters as of November 2018, with over 700 students participating in programs. It does not appear that Educators Rising has tracked how many students go on to obtain post-secondary education degrees. Because the program is only three years old, it is unlikely that any participants would already be teaching, but this would be important to track in the future.

Mixed/inconclusive evidence. National Board certification for teachers does not have a clear effect on student achievement. The National Board for Professional Teaching Standards (NBPTS) establishes standards for accomplished teachers and awards professional certification to teachers who can demonstrate that

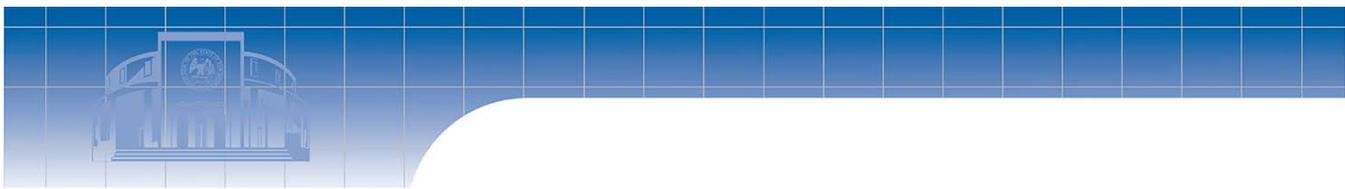


their teaching practices meet those standards. The certification process, which can take between one and five years, includes a computer-based assessment and submission of three portfolio entries. Teachers who receive certification typically receive an annual stipend, in addition to their regular salary.

The What Works clearinghouse indicated mixed effects on mathematics achievement and no discernible effects on English language arts achievement for students in grades 3 through 8. The Washington State Institute for Public Policy (WSIPP) found that while certification can identify effective teachers, it does not make teachers more effective than they were before certification. Thus, while it may be useful as a signaling device, certification is likely not an effective mechanism to improve teacher quality or student outcomes.

National Board certification is a route to level 3 licensure; less than 5 percent of New Mexico teachers hold certifications. In FY18, the stipend for National Board certified teachers in New Mexico was approximately \$6,200, representing the funding formula unit value multiplied by a factor of 1.5. Teachers can use a National Board certification to advance from level 2 to a level 3 licensure (they can also advance by achieving a certain score on their NMTEACH summative report or completing a professional development dossier, which also require a master's degree).

For FY19, the funding formula includes 661 teacher FTEs with National Board certifications across 38 school districts and 20 state-chartered charter schools. According to NBPTS, 927 teachers in New Mexico have active certifications. This number is higher than the figure in the funding formula, likely because it refers to individuals, rather than FTE, and includes counselors and other non-classroom teachers. In FY17, NBPTS data indicates that a total of 102 teachers received new certifications. Using the higher NBPTS figures, only 4.4 percent of total teachers in the state hold active National Board certifications. National Board certified teachers are concentrated in a small number of districts. Over three-quarters are in six districts (Albuquerque, Santa Fe, Las Cruces, Rio Rancho, Gallup, and Los Alamos), with Albuquerque having a disproportionately large share of certified teachers. While the district accounted for 55 percent of certified teachers in 2017, it accounted for 28 percent of total teachers in the state.



Extended Learning Time – Overview of Programs and Interventions

Strong evidence. Academic summer and afterschool programs can measurably improve student outcomes; non-academic programs may have other benefits. Summer and afterschool programming, sometimes called out-of-school time (OST), includes both academic and non-academic models that aim to provide students with high-quality, enriching time beyond the regular school day and year. OST programs have three primary benefits: providing high-quality supervision at times when youth may engage in risky behaviors; providing enriching activities that may otherwise be dependent on family income; and providing an academic boost to struggling students.

Table 17. Expected Benefit-to-Cost Ratio of Summer Learning Programs

Intervention	Benefit-to-Cost Ratio	Chance Benefits Will Exceed Costs	Effect Size on Test Scores
Summer learning programs (academic focus)	\$8	88%	0.064

Source: Results First model, using New Mexico assumptions

The What Works for Health Clearinghouse concludes that there is strong evidence that summer learning programs improve participants' reading and math outcomes. Similarly, a meta-analysis of OST studies by the RAND Corporation concluded that academic OST programs can measurably improve student achievement (the exception was homework help, which did not have an effect on academic outcomes). The study also argued that while non-academic OST programs do not necessarily improve academic outcomes, they provide other benefits – like high-quality supervision – which are often not well measured. There is some evidence that afterschool and summer learning programs can help to offset the achievement gap facing low-income students, who typically have greater levels of summer learning loss than their higher-income peers.

New Mexico schools can apply for funding for out-of-school time programs, but programs do not need to be evidence based. Since FY15, a general fund appropriation for afterschool and summer enrichment programs has funded programs through a competitive application process. In FY19, the Legislature appropriated \$350 thousand for these programs, distributed across 10 schools. While schools have flexibility in developing their own programs, PED's request for application indicates prioritization of funding for schools with a high percentage of at-risk students and whose programs provide academic enrichment, physical activity, and nutrition education.

While individual schools may use evidence-based practices in designing their programming, PED does not specifically require this. The request for application asks schools to describe the effectiveness of proposed programs and activities and how they will contribute to closing a school's achievement gap.

New Mexico also runs K-3 Plus, a program that extends the school year for students in grades K-3 by 25 instructional days prior to the start of the school year. The program has shown promising results in closing achievement gaps.

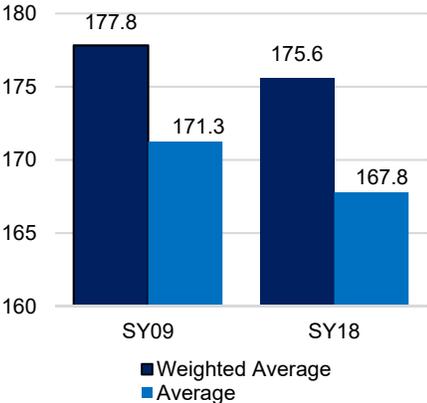
Promising evidence. Extended instructional time can be an important tool to expand learning opportunities, especially for at-risk students. Research on the effects of extended learning time has found positive results for students, especially those at risk of school failure. In a meta-analysis of 15 empirical studies on the impact of additional instructional time, 14 studies found evidence of a positive relationship for at least one of the intended achievement outcomes or subsample of students. Some studies have found that both extended school year and extended school day models can especially benefit students in minority groups, those who have performed poorly on standardized tests, and those eligible for free or reduced price lunch (FRL). Extending the school year, in particular, can help to mitigate the summer learning loss that disproportionately impacts low-income students.

Critically, additional instructional time must be high-quality time, delivered by effective teachers who have time for professional development, collaboration, and planning.

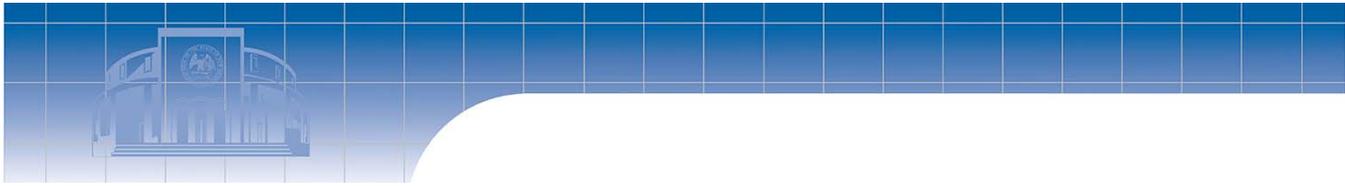
In FY18, fewer than 20 percent of all LEAs had at least 180 instructional days, the most common requirement nationally.

School day and school year lengths vary widely across New Mexico LEAs. The state requires 990 instructional hours for grades K-6 and 1,080 hours for grades 7 – 12, as well as a minimum of 5.5 hours per day for K-6 and six hours for grades 7 – 12. The state has never had a minimum instructional day requirement. LEAs can implement schedules that exceed the minimum number of hours. Despite an addition of \$14 million into the funding formula in FY09 to pay for one additional day, students on average had fewer days in FY18 than in FY09 (Chart 12). Over 40 percent of school districts and almost a quarter of charter schools use a four-day week schedule.

Chart 12. LEA Average and Weighted Average Annual Instructional Days



Source: LFC Files
Note: LEAs' weighted average instructional days were weighted by their share of total student membership.



Non-Academic Support – Overview of Programs and Interventions

Strong evidence. *Dropout and truancy prevention programs can increase school engagement, leading to better graduation and attendance outcomes, but effectiveness of intervention models varies.* Dropout and truancy prevention programs aim to address risk factors that lead to frequent unexcused absences or dropping out of school by increasing school engagement and attachment.

Dropping out of high school has serious negative impacts on students' futures, with students who dropout more likely to be unemployed and have lower adult earnings. They also have poorer health outcomes, and are more likely to engage in criminal activity. Nationally, approximately 5 percent of students drop out of school. The dropout rate for low-income students is more than twice the rate of their higher-income peers.

Of various dropout prevention models, the What Works Clearinghouse rates interventions that engage students by offering curricula and programs that connect schoolwork with college and career success as having strong evidence of effectiveness on graduation rates. Intensive, individualized support for at-risk students shows moderate evidence of effectiveness, while more general interventions intended to monitor all students do not have meaningful evidence of effectiveness. The effect of dropout prevention programs on improving graduation rates is based on increasing school engagement. The National Center for School Engagement (NCSE) has identified three factors related to school engagement that can increase students' interest in and attachment to school (Figure 7).

There is also a range of models for truancy prevention programs, including case management, attendance monitoring, parental outreach, counseling, and academic remediation. Overall, truancy prevention interventions reviewed by the Crime Solutions Clearinghouse increased attendance by an average of 4.69 days. While research on specific types of interventions is limited, research suggests that behavioral and mentoring programs were more effective than general youth development interventions, or programs that place students in alternative schools. Evidence on interventions' effect on student achievement or high school graduation rates is inconclusive. However, programs that narrowly focus on habitual truancy may miss students who have a high number of excused absences. Chronic absenteeism – whether excused or unexcused – can set students back academically and disproportionately affects black, Hispanic, and Native American students, as well as students with disabilities. Almost three-quarters of states now use chronic absenteeism in reporting measures, although definitions differ across states.

Dropout and truancy interventions in New Mexico have had mixed results. The overall habitual truancy rate in New Mexico – or the share of students with ten or more unexcused absences in a school year – was 15.5 percent in 2014, according to the New Mexico Indicator-Based Information System (NM-IBIS). Rates ranged from less than 2 percent in Los Alamos and De Baca counties to over 30 percent in Taos county. With the lowest graduation rate in the country, New Mexico also has a high dropout rate. A 2016 LFC evaluation found that students who drop out were clustered in a few schools and districts, with half of dropouts in 25 schools. The evaluation also found that students who drop out are more likely to leave school in ninth or tenth grade.

The New Mexico Compulsory School Attendance Law (Section 22-12 NMSA 1978) requires school districts to identify students with unexcused absences and provide intervention strategies to keep students who are habitually truant in school, including communicating with parents and addressing the causes of truancy. While the statute

Figure 7. Factors Related to School Engagement

- **Increasing students' emotional involvement** in school;
- **Establishing meaningful connections** among peers and schools through supportive, well-defined expectations;
- **Fostering greater student achievement** by ensuring all students have the necessary resources to graduate.

Source: National Center for School Engagement, 2016



currently focuses on truancy, the state’s ESSA plan for 2019 indicates that statewide tracking will include both excused and unexcused absences.

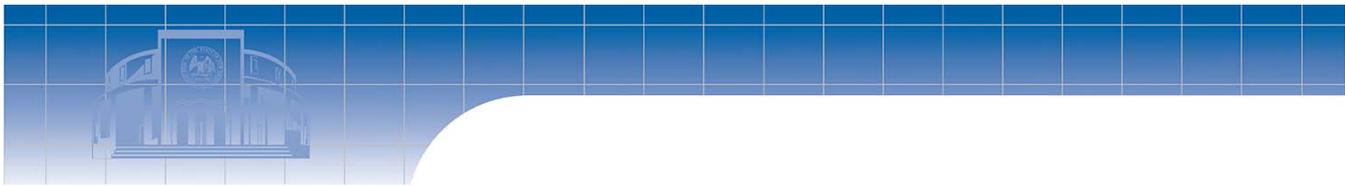
As part of the public schools budget, PED has, in the past, funded dropout and truancy prevention coaches. Thirty-one LEAs received a total of \$3.3 million in FY18 to fund coaches. Performance measures suggest that the program has not been effective. In a joint accountability report in 2018, the LFC and LESC indicated that in middle schools with coaches, 3 percent fewer students were truant in FY16 versus in the previous year, while high school students in schools with coaches had a 2 percent higher truancy rate. The most-improved half of participating schools cut their truancy in half, while the lower-performing half of schools saw rates increase from 15 to 25 percent. Statewide, six participating schools more than doubled their truancy rates.

Some New Mexico LEAs use the Early Warning System (EWS) model to identify and intervene with at-risk students. EWS leverages software to help schools provide more effective prevention and early intervention services. The system uses student attendance, behavior, and course performance (the ‘ABCs’) as indicators of a student’s risk of dropping out. Of the various dropout prevention models examined in the What Works Clearinghouse, monitoring students using ABC indicators has the least evidence of effectiveness on student graduation rates. It does not appear that PED has evaluated use of the system to determine whether schools that implement EWS have better attendance or graduation outcomes.

Strong evidence. Community schools incorporate evidence-based educational strategies in a comprehensive model that can improve student outcomes. Community schools are a place-based strategy in which schools partner with community agencies to offer integrated academics, health and social services, youth development, and community engagement. Community schools incorporate a number of educational strategies. Four features appear in most community schools:

- Integrated student supports
- Expanded learning time and opportunities
- Family and community engagement
- Collaborative leadership and practice

According to the What Works for Health Clearinghouse, there is some evidence that community schools increase academic achievement and improve student attendance compared to traditional public schools, and are also likely to reduce disparities in achievement. Perhaps unsurprisingly, research from the clearinghouse also finds that community schools that provide more services have better outcomes than those that provide fewer services. Similarly, a research review by the Learning Policy Institute concluded that there is promising evidence that comprehensive community school intervention models have a positive impact on student achievement, including reducing racial and economic achievement gaps. Community schools also positively impact attendance rates and high school graduation rates. The same report also examines individual components of the community school model, finding strong evidence that these components – extended time, integrated supports, and family engagement – are associated with improvements in student achievement and other positive outcomes.



The Learning Policy Institute points out that while the community school model can be beneficial for students of all backgrounds, many community schools are established in neighborhoods where structural forces linked to racism and poverty create barriers to learning and school success, and where families often have fewer resources to supplement what schools provide. Community schools may also serve as “hubs” where the broader community can participate in activities and receive services.

As with any intervention, implementation is important. The Learning Policy Institute identifies several evidence-based characteristics of effective community schools (Figure 8), which echo more general evidence about what makes for a successful learning environment. In some ways, community schools are merely a mechanism for bringing together various disparate interventions that have proven to be effective.

New Mexico allows LEAs to implement community school models, with some stipulations.

The state’s Community Schools Act (Section 22-32-3 NMSA 1978) stipulates that a community school initiative may be created in any public school, and must include extended learning programs, school-based or school-linked health care, opportunities for families to acquire early learning skills, community partnerships, and case management for students. Statute also requires that a public, private, or community-based organization serve as a lead partner agency to coordinate programs and services, and that any initiative includes an assessment of community resources. Finally, statute requires use of evidence-based models.

According to research by the LESC, there are 29 schools in New Mexico that are fully implementing a community school model. Twenty of these are in Albuquerque, eight are in Santa Fe, and one is in Las Cruces.

Schools that are interested in implementing community school models can leverage funding for extended learning time initiatives, as well as at-risk formula funding, for community school components including wraparound services and extended learning time.

Promising evidence. Integrated student support services, typically targeted to at-risk students, can contribute to improved student outcomes. Integrated student supports (ISS), also called wraparound services, refer to a set of tailored and coordinated prevention, intervention, and enrichment services provided through a school or district. ISS are designed to address academic and non-academic barriers to success. Services typically target at-risk students, and can include tutoring, mentoring, case management, career and college preparation, healthcare, and family assistance. The logic model behind ISS is based on the idea that there are many predictors of academic success and high school completion, but each has a relatively small effect size on its own. Thus, addressing a spectrum of academic and non-academic factors is likely to be more successful than addressing individual factors.

A 2014 evidence review found that ISS can contribute to improved student outcomes, including in math achievement and overall GPA. Services also have a positive impact on attendance and dropout rates. The review concluded that an emerging evidence base supports the effectiveness of ISS, but research on the effectiveness of specific practices and services is limited, and further research is needed. A 2010 study of over 7,900 students in Tulsa, Oklahoma, area schools receiving ISS in fifth grade found that students who attended schools with ISS had better grades and attendance compared to peers who did not attend such schools.

Figure 8. Characteristics of Effective Community Schools

- Creating meaningful learning and well-rounded development is everybody’s top priority
- Learning is facilitated by well-trained, experienced, efficacious teachers
- Assessment is used as a tool for professional learning and the improvement of practice
- Funding and resources are sufficient to meet the needs of the school community and are used well
- Students get the additional support they need to be ready and able to learn

Source: Learning Policy Institute, *Community Schools as an Effective School Improvement Strategy*, December 2017



Costs to provide ISS vary. A 2014 analysis by the Massachusetts Budget and Policy Center estimated that it would cost approximately \$1,300 per student to provide comprehensive services (Table 18).

ISS, which may be offered by community providers, are a core part of the community schools model, and the terms are used interchangeably in some studies. However, community schools have additional features, such as extended learning time. See above for more detail on community schools.

One component of ISS, school-based case management, has strong evidence of effectiveness and a relatively high benefit-to-cost ratio, based on Results First (see Figure 9). Results First does not have information to estimate the effects of an overall ISS model.

Some New Mexico students receive ISS through LEAs or through non-profit organizations. PED has developed a Response to Intervention (RtI) framework as part of federal guidelines that provides guidance on how to design and implement school-wide supports. The model includes three levels, or tiers, of instructional and behavioral interventions intended to address students' unique needs. LEAs are required to develop local implementation plans, based on the RtI framework that organize resources around the framework.

The Human Services Department runs a Medicaid School-Based Services program that allows schools to offer health and other services, including mental health, nutrition, transportation, and case management. Schools can receive reimbursement for services provided to Medicaid-eligible students with special education and health care needs. There are also 70 school-based health centers in the state, primarily in high schools, funded by contracts with the Department of Health. They provide integrated primary and behavioral health care using approaches tailored for youth and also provide comprehensive reproductive health counseling and services.

In some districts, ISS are provided by non-profit organizations. For example, eight schools in Santa Fe participate in the Community in Schools program, a model that utilizes site coordinators to work with community partners and volunteers to provide both school-wide services and targeted interventions. The program provides academic support, family engagement, healthcare services, and enrichment activities. The What Works for Health Clearinghouse identifies Communities in Schools as a model that has been shown to improve academic achievement and increase student attendance.

Table 18. Estimated Cost per Student for Wraparound Services

Element	Cost per Student
Wraparound services coordinator	\$526
Health service clinics	\$549
Mental and behavioral health, wellness, and prevention programs	\$111
Family resource centers	\$97
District administration	\$29
TOTAL annual cost per student	\$1,312

Source: Massachusetts Budget and Policy Center, *Uplifting the Whole Child: Using Wraparound Services to Overcome Social Barriers to Learning*, 2014

Figure 9. Case Management as a Component of ISS

Model: Case management involves placing a full-time social worker or counselor in a school to help identify at-risk students' needs and connect students and families with relevant services in and outside of the K-12 system.

Outcomes: Results First indicates a cost-to-benefit ratio of \$79 for case management.

Source: Results First, using New Mexico assumptions



Teaching and Instructional Practices – Overview of Programs and Interventions

Strong evidence. Tutoring is an effective method for improving at-risk students’ proficiency in core subject areas, especially when administered one-on-one. Research has found that targeted tutoring of students can improve outcomes and close achievement gaps. One-on-one tutoring has a greater impact on outcomes than small group tutoring, especially when provided by teachers (rather than paraprofessionals or volunteers). However, some research suggests that volunteers can also be effective, if they are well trained in effective tutoring practices. A meta-analysis of studies on supplemental, one-to-one reading interventions for elementary school students at risk of reading failure found that interventions that used trained volunteers or college students were highly effective in closing the student achievement gap. The U.S Department of Education has identified several characteristics of effective tutoring (Figure 10).

Figure 10. Characteristics of Research-Based Tutoring

- Close coordination with the classroom teacher
- Intensive and ongoing training for tutors
- Well-structured tutoring sessions with carefully scripted instruction
- Careful monitoring and reinforcement of progress
- Frequent and regular tutoring sessions (10-60 minutes daily)
- Specially designed interventions for children with severe learning difficulties

Source: U.S Department of Education

While small group tutoring is not as effective as one-on-one tutoring at improving student achievement outcomes, it may be a more cost-beneficial model for many schools. For example, of four tutoring models examined in the Results First model, the most cost-beneficial is small-group tutoring by trained, but non-certificated adults (Table 19).

Table 19. Expected Benefit to Cost Ratios of Tutoring Interventions

Intervention	Benefit-to-Cost Ratio	Chance Benefits Will Exceed Costs	Effect Size on Test Scores
By non-certificated adults, small-group, structured	\$32	78%	0.126
By certificated teachers, small-group, structured	\$15	97%	0.209
By adults, one-on-one, structured	\$7	95%	0.213
By adults, one-on-one, non-structured	\$5	74%	0.061

Source: Results First model, using New Mexico assumptions

New Mexico’s Response to Intervention (Rtl) framework includes guidance on individualized academic interventions, including tutoring. Tier two of the framework is designed to provide targeted, supplemental individualized support for students who are performing above or below standards in academics or behavior. These services are implemented within the classroom and include individual tutoring, as well as increased frequency and duration of instruction.

ESSA allows states to set aside 3 percent of Title I allocations for direct student services, which can include high-quality tutoring and other individualized support for students. In SY19, PED distributed \$7.7 million in direct student services funds to 36 schools in 13 districts.

Strong evidence. Dual language education programs have academic benefits for both English learners and native English speakers. Dual language immersion (DLI) programs are a type of bilingual education that teach English along with a partner language (often Spanish). Dual language programs use the partner language for at least half the day in elementary grades and last for at least five years. Programs can either be one-way programs, provided to English learners, or two-way, which are designed to educate both English learners and native English speakers at the same time. The two-way approach allows English learners to help native English speakers learn the second language, and native English speakers help English learners acquire English skills.

Research suggests that DLI programs have academic benefits for both native and non-native English speakers. A 2017 RAND Corporation randomized controlled trial of students at Portland Public Schools found that English learner students in DLI programs outperformed their peers on state accountability tests in reading by 13 percent in fifth grade and by 22 percent in eighth grade. Students classified as English learners in kindergarten who participated in DLI programs were more likely to have reached English proficiency by sixth grade. By implementing either one-way or two-way dual language immersion programs, schools can expect one-fifth to one-sixth of the achievement gap for English learners to close each year. See Figure 11 for features of effective two-way DLI programs.

The number of DLI programs has increased rapidly in the United States in recent years, with recent estimates placing the count between 1,000 and 2,000 nationally.

New Mexico has five types of bilingual education models, including dual language. New Mexico was the first state in the US to have a bilingual multicultural education law, passing the Bilingual Multicultural Education Act of 1973, and expanding the act in 2004 (Section 22-23-1 NMSA 1978). The state provides funding for bilingual education through the funding formula. In FY18, 77 LEAs generated a total of approximately \$34 million in funding for 49,910 participating students. The state funds language programs in Spanish, Navajo, Jicarilla Apache, Keres, Tewa, Tiwa, Towa, and Zuni. Teachers must have a Teaching English to Speakers of Other Languages (TESOL) endorsement.

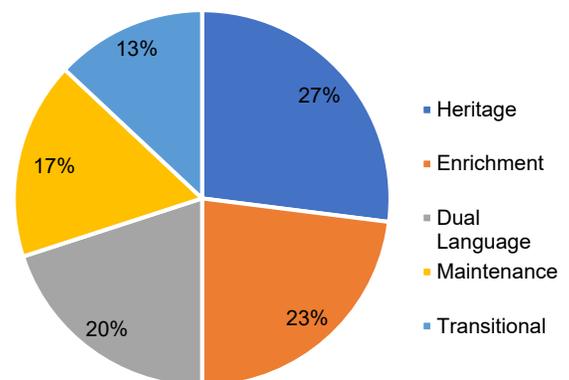
PED authorizes several models of bilingual multicultural education, including one-way and two-way DLI, enrichment (designed to further develop the home language of fully English proficient students), heritage (designed to support and revitalize a student’s native language and culture through oral and/or written language instruction), maintenance (designed to develop and maintain proficiency and literacy in the primary or home language while developing English literacy and oral skills), and transitional (designed to transfer students from home language instruction with gradual transition to an all-English curriculum). See Chart 13 for a breakdown of programs by model.

Figure 11. Effective Two-Way Dual Language Program Features

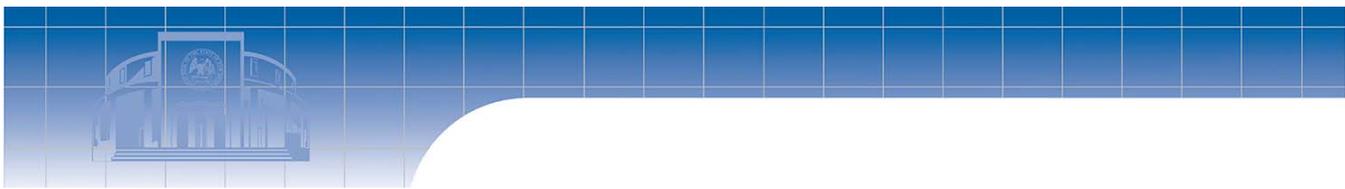
- **A minimum of six years** of bilingual instruction
- **High quality language arts instruction** in both languages
- **Use of non-English language** for at least 50 percent of the instructional time
- **High quality instructional personnel**, proficient in the language of instruction
- **Active parent-school partnerships**

Source: Association for Supervision and Curriculum Development, 2013

Chart 13. Percentage of Bilingual Programs by Type, 2015-2016



Source: PED Bilingual Multicultural Education Annual Report SY 2015–2016



New Mexico offers a bilingualism-biliteracy seal on diplomas of students who meet certain language-related criteria, such as credit units, assessments or portfolios, or tribal certification.

Mixed/inconclusive evidence. Culturally responsive teaching has not been sufficiently evaluated for its impact on student outcomes. Culturally responsive teaching is an approach that encourages the use of teaching strategies, content, and materials that are relevant to students’ diverse cultural, ethnic, and linguistic backgrounds. The approach is described in a 2017 article from the Institute of Education sciences as “a pedagogy that empowers students intellectually, socially, emotionally, and politically by using cultural references to impart knowledge, skills, and attitudes.” Culturally responsive instruction can help educators address barriers that cause disparities in student achievement and design instruction to be mindful of those barriers, in order to mitigate the effects of negative cultural stereotypes on student performance. For an example of implementation, see Figure 12 for Alaska Standards for Culturally Responsive Schools.

Research on culturally responsive teaching is inconclusive, with a lack of experimental or quasi-experimental research. While a number of studies have examined the approach, only two looked at the impact on student outcomes, and neither established a conclusive relationship. However, this does not mean that culturally responsive teaching is not valuable – only that it has not been adequately evaluated yet.

Culturally responsive teaching is often discussed in the context of instructional best practices. While the impact on student outcomes is not conclusive, some practices have been used with success. For example, some practices of culturally responsive teaching have been shown to be effective in communicating high expectations to all students, regardless of race or cultural background. These include using a variety of visual aids that reflect students’ backgrounds, using some words in students’ heritage languages, and identifying students’ current knowledge before instruction.

New Mexico lacks a clear definition of culturally responsive practices. In New Mexico, the Indian Education Act (Section 22-23A NMSA 1978) and the Hispanic Education Act (Section 22-23B NMSA 1978) address culturally relevant instruction. The Indian Education Act requires the appointment of an assistant secretary for Indian education, who, among other responsibilities, provides assistance in developing culturally relevant curricula that includes native languages, culture, and history, and also seeks funding for culturally relevant support services. The Hispanic Education Act requires the appointment of an education liaison who also supports LEAs in providing culturally relevant learning environments and instructional materials. Neither act defines culturally relevant practices.

Figure 12. Alaska Standards for Culturally Responsive Educators

Culturally-responsive educators:

- Incorporate local ways of knowing and teaching in their work.
- Use the local environment and community resources on a regular basis to link what they are teaching to the everyday lives of the students.
- Participate in community events and activities in an appropriate and supportive way.
- Work closely with parents to achieve a high level of complementary educational expectations between home and school.
- Recognize the full educational potential of each student and provide the challenges necessary for them to achieve that potential.

Source: Alaska Standards for Culturally Responsive Schools, Assembly of Alaska Native Educators



Figure 13. Native American Community Academy Model

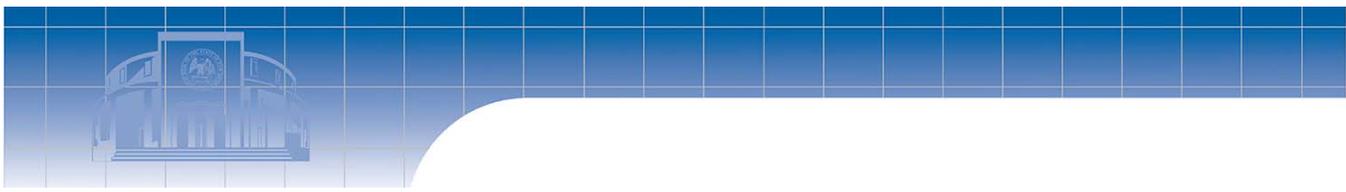
Features of NACA's model include:

- **Instruction of Native language skills** that are viewed as important for the overall wellness of Native students and communities.
- **Native perspectives in the curriculum**, with a special focus on local and familial experiences to enhance and strengthen students' cultural and youth identity.
- **Experiential and community-based programs** that engage students with hands-on, active learning as a way to uncover the importance of place and land among Native peoples.
- **Holistic student assessments** that include additional measures beyond state testing, such as the quality of students' relationships with others.
- **Parent and community involvement** through events such as community feast days and the school powwow.

Source: *Indian Education in New Mexico, 2025*, Indigenous Education Study Group, 2010

PED's Language and Culture Bureau is responsible for developing policies related to culturally and linguistically responsive instruction. On its website, PED publishes NMTEACH teacher observation rubrics with "culturally and linguistically responsive" practices highlighted. For example, as part of Domain 1, teachers are expected to "strategically implement information and strategies obtained through professional development to address individual learning styles, rates, levels of learning, students' cultural backgrounds, and/or English language proficiency." However, other highlighted content appears to address more general instructional practices that do not necessarily relate to culturally or linguistically responsive practices, such as "using existing resources – including support materials, textbooks, and supplementary materials – to enhance content knowledge for teaching and to differentiate instruction for all students" or "engages in opportunities to support and mentor colleagues by sharing knowledge, information, and strategies for establishing a culture of learning." This suggests that the department – and stakeholders – may need a clearer definition of culturally responsive instruction.

An example of a New Mexico school implementing culturally responsive practices is the Native American Community Academy (NACA) in Albuquerque, which serves students from over 37 tribes and makes culturally responsive practices a core part of its curriculum. See Figure 13 for more detail on NACA.



College and Career Readiness – Overview of Programs and Interventions

Strong evidence. Career and technical education increases graduation rates and appears to raise education, employment, and earnings outcomes. Career and technical education (CTE) programs, sometimes called vocational training, teach high school students skills needed for specific occupations, alongside academic coursework. CTE programs often include internships or job placements outside of school settings. Some programs also include support services such as childcare, transportation, or job placement assistance. CTE programs prepare students for a wide range of careers including information technology, health services, hospitality and tourism, manufacturing, or STEM-related jobs. Many of these careers require additional education such as professional certification or associate degrees.

The What Works for Health Clearinghouse classifies CTE as a scientifically supported intervention that leads to increased high school graduation rates. Programs have the greatest effect on males and low-income students. There is some preliminary evidence suggesting that CTE increases students' post-secondary education, employment, and earnings. This effect is only seen for students who complete occupation-specific CTE, not for those who complete general or non-occupation-specific CTE.

CTE has, in the past, had a negative connotation in some contexts, in part because it was often used as a “tracking” model that put some students – especially low-income and minority students – on a path to low-paying careers. However, when implemented well, CTE prepares students for employment in high-growth industries, and does not preclude college completion. A 2016 study from the Fordham Institute found that Arkansas students with greater exposure to CTE were as likely as their peers to pursue a four-year degree and more likely to pursue a two-year degree. The What Works for Health Clearinghouse identifies features of successful CTE programs, including:

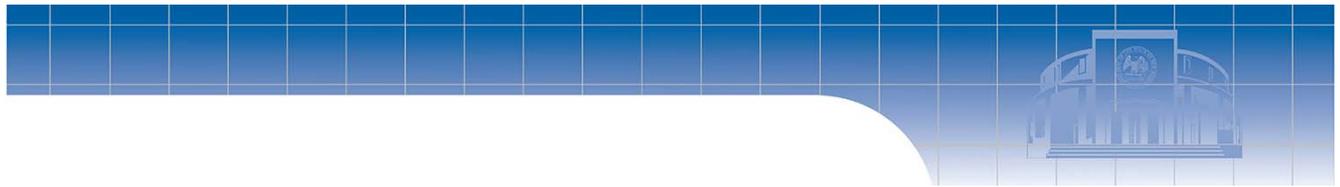
- Identifying high growth industries;
- Aligning CTE courses to specific skills and credentials;
- Encouraging CTE concentrations; and
- Making high school CTE credits count toward specific postsecondary credentials.

Some CTE models specifically target students at risk of dropping out of high school. For example, Career Academies are a “school within a school” model in which students take career-related courses with a cohort of students who remain together over time. Each academy has a specific career theme, such as health care or technology, that is relevant to the local economy and local employment needs. There is some evidence that Career Academies have positive effects on school completion.

Some evidence suggests that CTE participants in the state have better graduation outcomes than non-participants. New Mexico does not have a common approach to CTE. Rather, various programs exist across LEAs and other providers. PED made available approximately \$700 thousand for FY19 from federal Perkins funds for competitive grants of \$50,000 to LEAs to develop CTE programs that provide students with career guidance and work-ready skills aligned to needs of employers in specific career paths.

PED has also adopted career cluster pathways and standards based on national benchmarks. Career clusters are intended to define what students should be able to accomplish and understand upon completing a program of study. Sixteen clusters span areas such as architecture and construction, health sciences, and hospitality and tourism.

According to the Association for Career and Technical Education, nearly 94 percent of CTE concentrators in the state graduated in FY17, compared to 69 percent of New Mexico students overall. However, this figure is for a relatively small number – approximately 7,100 – who concentrate in a CTE field, and does not include the larger number who participate, which numbers about 63 thousand, according to Advance CTE, a national organization.



The figures do not represent a randomized group, so there may be some selection bias occurring. Still, in a state with poor graduation results, these outcomes are promising.

Strong evidence. Dual credit programs have a positive impact on student achievement, and also improve graduation and college outcomes. Dual credit programs allow high school students to take courses that satisfy high school graduation requirements while simultaneously earning credits that count towards a postsecondary degree or certificate. These programs are also referred to as dual enrollment, and are designed to boost college degree attainment. The What Works Clearinghouse points to three mechanisms that dual credit programs use – they allow students to experience college-level work while having additional support, they give students a head start in accumulating credits, and they often offer free or low-cost tuition to reduce the overall financial burden of college.

Early college high schools are a type of dual credit program where the curriculum is aligned to college requirements and students receive more formal support towards attaining credit. Some such schools allow students to earn a two-year college degree as well as their high school diploma.

The What Works Clearinghouse found that dual credit programs have positive effects on student achievement in high school, as well as on high school graduation and college degree attainment. On average, programs improved students' academic achievement by seven percentile points.

New Mexico students who take dual credit courses have higher graduation rates, but other student characteristics may explain this. New Mexico requires that students complete at least one dual credit, honors, Advanced Placement, or distance learning course to graduate from high school, and all LEAs must have an agreement with at least one public or tribal postsecondary institution. The number of students taking dual credit coursework increased by 125 percent between FY09 and FY17, to almost 22 thousand, while the number of dual credit courses has increased by 150 percent over the same period. In FY17, 62.3 percent of those students took just one dual credit course.

The LFC found that in FY15, the high school graduation rate for dual credit students was 85 percent, compared to a statewide graduation rate of 69 percent in that year. However, the LFC report concluded that students' overall academic aptitude may explain the higher graduation rates, rather than enrollment in dual credit programs alone.

There are 20 early college high schools in the state, with approximately 2,000 students enrolled. The LFC is currently conducting a randomized controlled trial on outcomes of early college high schools.

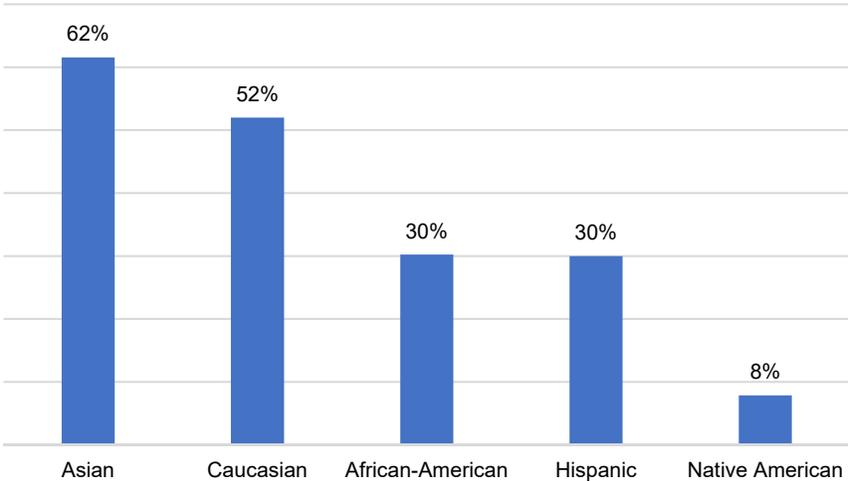
Mixed/inconclusive evidence. Students who complete Advancement Placement (AP) courses have better college outcomes, but outcomes are likely a result of student or school factors. AP coursework is related to dual credit programs – both allow students to earn college credits. However, AP courses are taught in the high school setting, while dual credit programs allow students to take college courses. Research suggests that students who successfully complete AP courses have better outcomes in college. Students who take AP exams are more likely to enroll in a four-year college, receive higher college grade point averages, and earn a bachelor's degree. However, studies have also found that these outcomes are not linked to AP coursework itself, but rather to other characteristics of AP classes and students, such as smaller classes, more effective teachers, and better prepared students. For example, a 2009 study of Texas students found that the relationship between AP courses and college GPA largely disappeared when accounting for a student's overall high school academic program. While the number of students taking an AP exam has increased from 820 thousand in 2001 to more than 2.6 million in 2017, many students are not receiving college credit from the tests. The majority of black and Hispanic test-takers score lower than a 3, which is typically the cut-off score to earn credit.



More students are taking AP exams in New Mexico, but passing rates are low. As mentioned above, New Mexico has a requirement that students complete at least one dual credit, honors, AP, or distance learning course to graduate from high school. The AP program received \$1 million in general fund appropriations in FY19.

In 2016, the College Board (the organization that designs and administers AP exams) reported that 10,756 New Mexico students took at least one AP exam, representing approximately 11 percent of all students in grades 9-12. Between 2001 and 2016, the number of New Mexico students taking at least one AP exam grew by nearly 170 percent, less than national growth of over 200 percent. In 2016, students took an average of 1.6 exams, and 38 percent of exams received a 3 or above, compared to 57 percent of exams nationwide. The share of exams in the state that receive a 3 or above varies significantly by ethnicity (Chart 14).

Chart 14. Percent of AP Exams Receiving a 3 or Above, 2016



Source: College Board 2016 AP data

APPENDICES

Appendix A. History and Background of the New Mexico Results First Project

The Washington State Institute for Public Policy (WSIPP) utilizes Results First, a cost-benefit model, to inform decisions of policy makers so they can invest in evidence-based programs delivering the best results for the lowest cost. WSIPP has attributed a number of positive outcomes to the use of the approach on which Results First is based, including a savings of \$1.3 billion per biennium and improved outcomes in the state of Washington.

Results First: Five Steps to Evidence-Based Policy Making

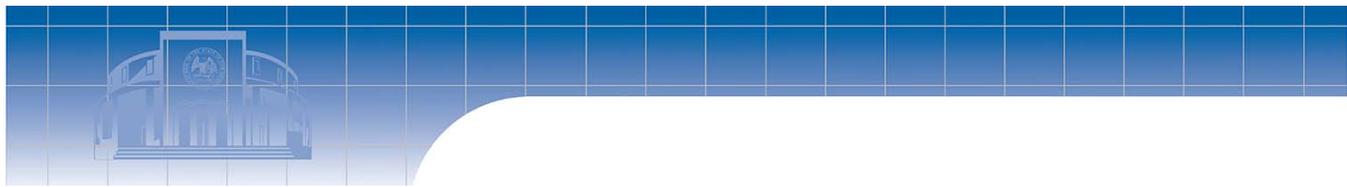


Source: Adapted from the Pew Charitable Trusts

Cost-Benefit Analysis of Evidence-Based Programs. The result of the cost-benefit analysis conducted in this report indicates New Mexico could obtain favorable outcomes related to K-12 education, if the state successfully implements evidence-based programs. The cost-benefit estimates were constructed conservatively to reflect the difficulty that can be encountered when implementing programs at scale. Results First analysis is based on an extensive and comprehensive review of research on program outcomes as well as an economic analysis of the benefits and costs of investments in evidence-based programs. The predicted costs, benefits, and return on investment ratios for each program are calculated as accurately as possible but are, like all projections, subject to some level of uncertainty.

Evidence-Based Program Implementation in Other States through Results First. States have made substantial progress in their implementation of Results First over the past few years and their use of the process to inform and strengthen policy and budget decisions. These efforts have resulted in millions of dollars in targeted funding, cost-savings, and cost-avoidance that will improve long-term outcomes for citizens in areas such as reducing recidivism, strengthening families, improving health status, and preparing children for the future.

The LFC has produced other Results First reports, located on the LFC website:
https://www.nmlegis.gov/entity/lfc/Evaluation_Unit_Reports.



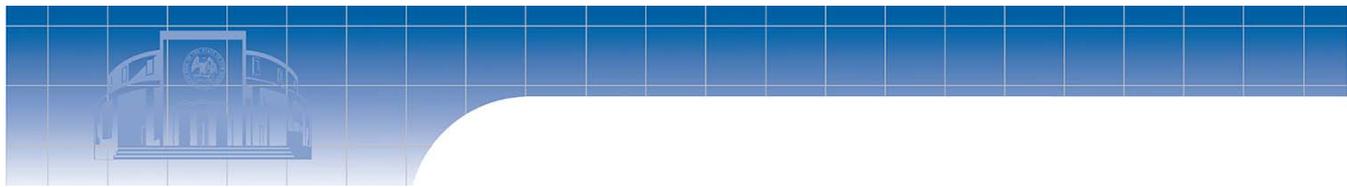
Appendix B. Results First Program Descriptions

Program	Description
Teacher Quality	
Teacher performance pay	Teacher performance pay programs distribute bonuses to individual teachers and sometimes to schoolwide staff. Performance is usually measured as value-added student test scores alone or in combination with some other assessment (such as principal evaluations). These evaluations examine the impact on student test scores from short-term, pilot performance pay programs. The performance bonuses in the evaluated programs ranged from a maximum of \$1,500 to a maximum of \$15,000; in over half of the programs, the maximum award was \$3,000.
Teacher experience	WSIPP performed an analysis of improvements in student test scores by teacher's years of experience, in comparison with a beginning teacher. Estimates represent the average annual gain in the first five years of teaching.
Teacher professional development: Use of data to guide instruction	One form of teacher PD involves training teachers how to use student academic assessment data to modify and improve instruction. This type of PD is usually paired with computer software that tracks and reports student assessment data to teachers. The specific types of assessments and software that have been evaluated and are included in this meta-analysis are (in no particular order): ISI (Individualized Student Instruction) using A2i software, Data-Driven District (3D), mCLASS/Acuity, Looking at Student Work, Formative Assessments of Student Thinking in Reading (FAST-R), and 4sight. In the evaluations included in meta-analysis, teachers received an average of 26 hours of training in how to use student assessment data to guide instruction.
Teacher professional development: Targeted	Targeted PD focuses on improving teaching in a particular content area (such as reading, math, and science) and/or a particular grade level. The specific types of PD that have been evaluated and are included in this meta-analysis are (in no particular order): Language Essentials for Teachers of Reading and Spelling (LETRS), Pacific Communities with High Performance in Literacy Development (Pacific CHILD), Cognitively Guided Instruction, Math & Science Partnerships (MSP), Teaching Science, Mathematics and Relevant Technologies (Teaching SMART), Discovery Model Schools Initiative, the Integrated Mathematics Assessment, Teaching Cases, and Metacognitive Analysis. In the evaluations included in the meta-analysis, teachers received an average of 63 additional hours of targeted professional development.
Teacher professional development: Online, targeted	Online targeted PD provides online training and collaboration for teachers who teach the same content and/or grade level. In the evaluations included in meta-analysis, teachers received an average of 70 additional hours of targeted online professional development (in comparison with the usual amount of PD time).
Teacher professional development: Induction/mentoring	Teacher induction programs typically assign an experienced mentor to new teachers in the first and second year of their careers. Evaluations included in the meta-analysis examine more intensive programs in comparison with less-intensive programs and their impacts on student test scores. Impacts on teacher retention and associated cost-savings are not measured in this analysis, and reducing teacher turnover is typically a primary goal of these programs.
Teacher professional development: Not targeted	The evaluations included in this analysis examine impacts on student outcomes from providing more time and funding for teacher PD without directing how those resources are used. In the evaluations included in the meta-analysis, teachers received an average of 20 additional hours of non-targeted professional development.
Consultant teachers: Content-focused coaching	Content-Focused Coaching is a professional development model that provides structured training to administrators, coaches, and teachers in order to improve instructional practices and student outcomes. The program provides training for school coaches and principals led by staff from the University of Pittsburgh's Institute for Learning. Coaches in turn provide professional development and one-on-one feedback to classroom teachers with a focus on specific reading comprehension strategies. The evaluation included in this analysis compared the effects of Content-Focused Coaching to coaching-as-usual.
Consultant teachers: Online coaching	Online coaching programs provide professional development support and feedback to classroom teachers in a web-based environment. The program included in this analysis (My Teaching Partner – Secondary) provides teachers with feedback and guidance on methods to improve their interactions with students. In the online coaching program, teachers upload video recordings of class sessions twice per month. Trained teacher consultants review the recording and provide feedback to teachers online and over the phone. In the evaluation included in this analysis, teachers participated in an average of 20 hours of training and coaching time.
Consultant teachers: Literacy collaborative	Literacy Collaborative is a comprehensive teacher professional development model that uses coaching for teachers as a primary strategy to improve instructional practices and student outcomes. The program provides up to 35 days of training at university sites to literacy coaches before starting coaching, as well as on-going training and support. Coaches provide professional development and work one-on-one with classroom teachers with a focus on the specific instructional strategies in the Literacy Collaborative model. The evaluation included in this analysis measures the impact of the model on students in grades K-2 after three years of implementation.
Consultant teachers: Coaching	Coaching is a form of job-embedded professional development for teachers. Coaching programs (sometimes called literacy coaching, mathematics coaching, instructional coaching, or other terms) typically assign a full-time, highly qualified, trained teacher to an individual school to serve as a coach. Generally, coaches work directly with classroom teachers (usually one-on-one or in small groups) to help them improve their instructional strategies. Coaches observe teaching, provide individual feedback, engage in co-teaching sessions, model effective instructional practices, and provide professional development workshops.



Teacher graduate degrees	The analysis examines the impact of having a teacher with a graduate degree, versus having a teacher without a graduate degree, holding all other measured school, teacher, and student characteristics equal.
Class Size	
Class Size Reduction	WSIPP estimates the benefits and costs of reducing average class sizes by one student. These costs account for state and school district teacher salary and benefits expenses, along with some other marginal operating costs, and capital cost amortization
Extended Learning Time	
Summer learning programs (academic focus)	This analysis includes a variety of summer learning programs in which academic improvement is the main goal, typically with a focus on remediation and/or prevention of summer learning loss. The programs encompass a range of models and include both community- and school-provided programs. Some programs offer services beyond academic support, such as enrichment and recreation. Based on the studies in this analysis, a typical program lasts about six weeks. This analysis excludes programs that focus on other goals such as general youth development or job training. This review also excludes programs that combine summer learning programs with additional support during the school year. In the evaluations included in this meta-analysis, the average summer program included 140 service hours and 40 hours of staff training/planning time.
Non-Academic Support	
Case management in schools	Case management involves placing a full-time social worker or counselor in a school to help identify at-risk students' needs and connect students and families with relevant services in and outside of the K-12 system. Three such models have been evaluated and are included in this analysis: Communities in Schools, City Connects, and Comer School Development Program. In practice, each of these models includes other services (such as extended learning time and educator training), but the program evaluations focus on the impact of the case management component.
Teaching & Instruction	
Tutoring: By non-certificated adults, small-group, structured	The small-group tutoring programs included in this analysis are structured, systematic approaches to tutoring struggling students in specific English language arts and/or mathematics skills. The evaluated programs include a variety of specific programs and curricula such as (in no particular order) Quick Reads, Gottshall Early Reading Intervention, Number Rockets, and Hot Math. The evaluated tutoring programs provide, on average, about 22 hours of tutoring time to groups of two to six (usually three) early elementary students. Tutors are usually instructional aides or college student volunteers and they participate in about 20 hours of training each year. Certificated teachers provide oversight and planning support.
Tutoring: By certificated teachers, small-group, structured	The small-group tutoring programs included in this analysis are structured, systematic approaches to tutoring struggling students in specific English language arts and/or mathematics skills. The evaluated programs include a variety of specific approaches and curriculums such as (in no particular order) Read Aloud, Proactive Reading, Responsive Reading, Leveled Literacy, Spell Read, Corrective Reading, and Number Rockets. An average program provides about 40 hours of tutoring time to groups of two to six (usually three) early elementary students. Certified teachers provide the tutoring and usually receive about 35 hours of training with a focus on the specific content and strategies used in the programs.
Tutoring: By adults, one-on-one, structured	The tutoring programs included in this analysis are structured, systematic approaches to tutoring struggling students in specific English language arts and/or mathematics skills. The evaluated programs include a variety of specific programs and curriculums such as (in no particular order) Reading Recovery, Mathematics Recovery, Edmark Reading Program, Howard Street Tutoring, and Early Intervention Program. The evaluated tutoring programs in this analysis provide, on average, about 30 hours of tutoring time to an individual student each year. Tutors are typically certificated teachers or specially trained adults (e.g. instructional aides and community volunteers). Tutors receive approximately 10 hours of training per year with a focus on the specific content and tutoring strategies.
Tutoring: By adults, one-on-one, non-structured	The tutoring programs included in this analysis provide one-on-one assistance to struggling students in English language arts and/or mathematics. The evaluated programs typically allow tutors to exercise their own discretion when selecting and implementing tutoring strategies. The programs typically serve early elementary school students and provide, on average, about 30 hours of tutoring time to an individual student each year. The tutors are non-certificated adults (e.g. instructional aides and community volunteers) who receive approximately two hours of training per year.
Charter Schools	
Charter schools: overall impact	A charter school is a public school governed under a legislative contract or state charter with state or local jurisdiction. The studies included in the meta-analysis use a variety of research designs and statistical approaches to measure impacts on student outcomes.
Charter schools: Urban charter schools	The studies used in the analysis included findings from specific cities (e.g. New York or Chicago), as well as statewide studies that examine impacts by urbanicity. The studies included a mix of lottery-based, fixed-effect, and matched comparison designs.
Charter schools: Non-urban charter schools	The effect sizes used in the analysis include only studies that conducted subgroup analysis to examine the impacts of charter schools located outside of urban areas. The effect sizes from the CREDO studies used in this analysis are weighted averages of the impacts of "suburban," "rural," and "town" charter schools.

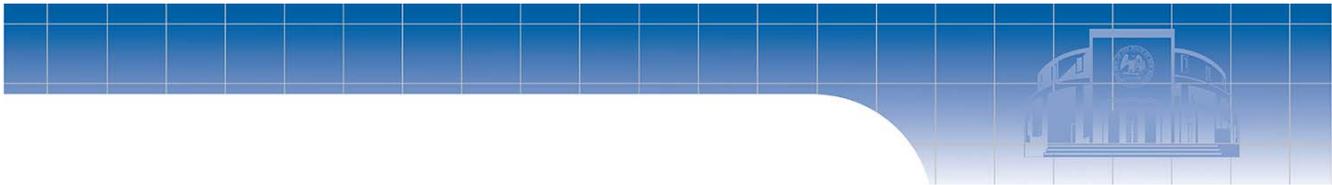
Source: Results First



Appendix C. Benefits of Results First Interventions

Intervention	Total Benefits	Benefit-to-Cost Ratio	Chance Benefits Will Exceed Costs	Effect Sizes	
				Test Scores	Graduation Rates
Consultant teachers: Literacy Collaborative	\$20,964	\$32	99%	0.428	
Case management in schools*	\$15,036	\$79	96%	0.026	0.109
Per-pupil expenditures: 10% increase for one student cohort	\$12,570	\$1	56%	0.120	0.101
Tutoring: By adults, one-on-one, structured	\$12,526	\$7	95%	0.213	
Tutoring: By certificated teachers, small-group, structured	\$12,291	\$15	97%	0.209	
Teacher professional development: Use of data to guide instruction	\$11,234	\$132	98%	0.117	
Consultant teachers: Online coaching	\$10,053	\$93	92%	0.082	
Consultant teachers: Content-Focused Coaching	\$8,342	\$190	94%	0.107	
Tutoring: By non-certificated adults, small-group, structured	\$7,410	\$32	78%	0.126	
Teacher professional development: Targeted	\$6,829	\$38	79%	0.071	
Teacher experience	\$5,702	\$13	99%	0.058	
Consultant teachers: Coaching	\$5,267	\$28	81%	0.060	
Summer learning programs: Academically focused	\$5,005	\$8	88%	0.064	
Charter schools: Urban charter schools	\$4,694	\$5	94%	0.044	
Teacher professional development: Induction/mentoring	\$4,390	\$6	60%	0.046	
Tutoring: By adults, one-on-one, non-structured	\$3,616	\$5	74%	0.061	
Class size: Reducing average class size by one student in kindergarten	\$3,095	\$11	99%	0.052	0.018
Teacher performance pay programs	\$1,936	\$22	87%	0.019	
Teacher professional development: Online, targeted	\$1,862	\$9	61%	0.020	
Class size: Reducing average class size by one student in grade 1	\$1,685	\$7	93%	0.027	0.010
Charter schools: Overall impact	\$1,387	\$1	55%	0.013	
Charter schools: Non-urban charter schools	\$1,075	\$1	45%	0.011	
Class size: Reducing average class size by one student in grade 2	\$935	\$4	78%	0.014	0.006
Class size: Reducing average class size by one student in grade 3	\$696	\$3	69%	0.010	0.004
Class size: Reducing average class size by one student in one grade, 4-6	\$537	\$2	62%	0.007	0.003
Class size: Reducing average class size by one student in one grade, 9-12	\$532	\$2	53%	0.004	0.003
Class size: Reducing average class size by one student in one grade, 7-8	\$414	\$2	59%	0.004	0.002
Teacher professional development: Not targeted	\$19	\$0	38%	0.000	
Teacher graduate degrees	(\$19)	(\$0)	7%	0.000	

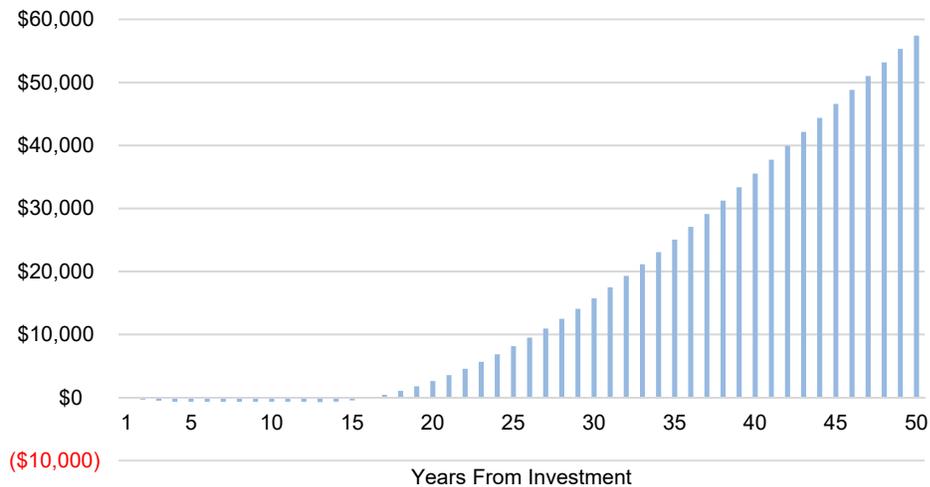
* Case management has a total of 12 monetized outcomes
 Source: Results First using New Mexico assumptions



Appendix D. Cumulative Cash Flows of Selected Interventions

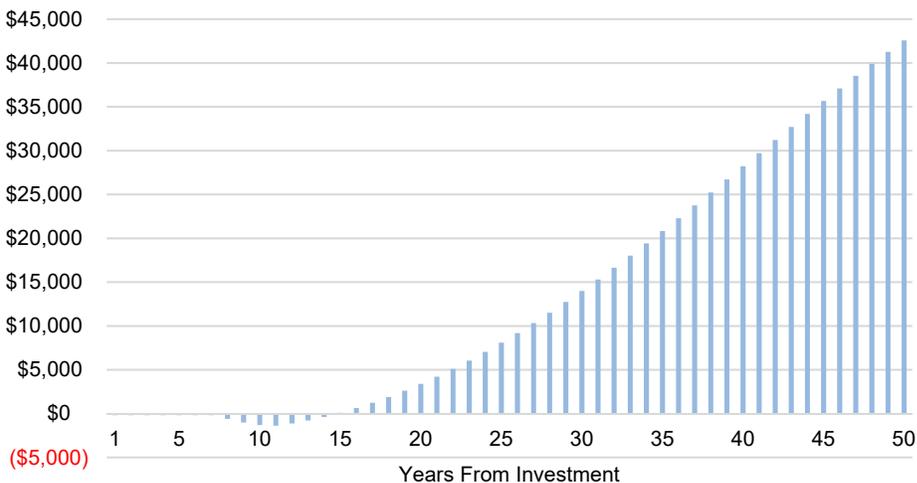
The graphs below illustrate the estimated cumulative net benefits per participant for the first fifty years beyond the initial investment in an intervention. Cash flows are shown in non-discounted dollars to simplify the “breakeven” point from a budgeting perspective (because they are not discounted, cash flows are higher than the total intervention benefits identified elsewhere in this report). If the dollars are negative (bars below the \$0 axis), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach \$0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above \$0, the benefits of the program exceed the initial investment.

Chart 15. Cumulative Cash Flows - Consultant Teachers: Literacy Collaborative



Source: Results First

Chart 16. Cumulative Cash Flows - Case Management in Schools



Source: Results First

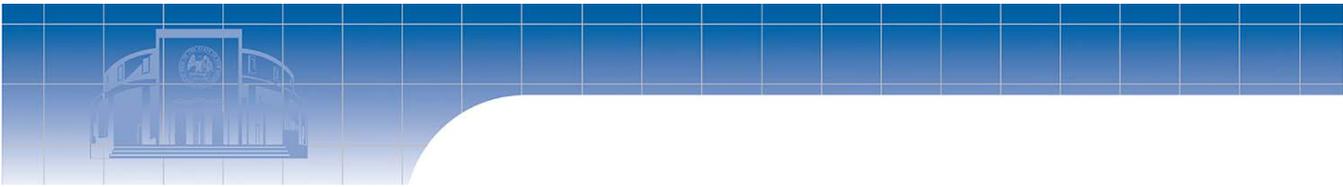
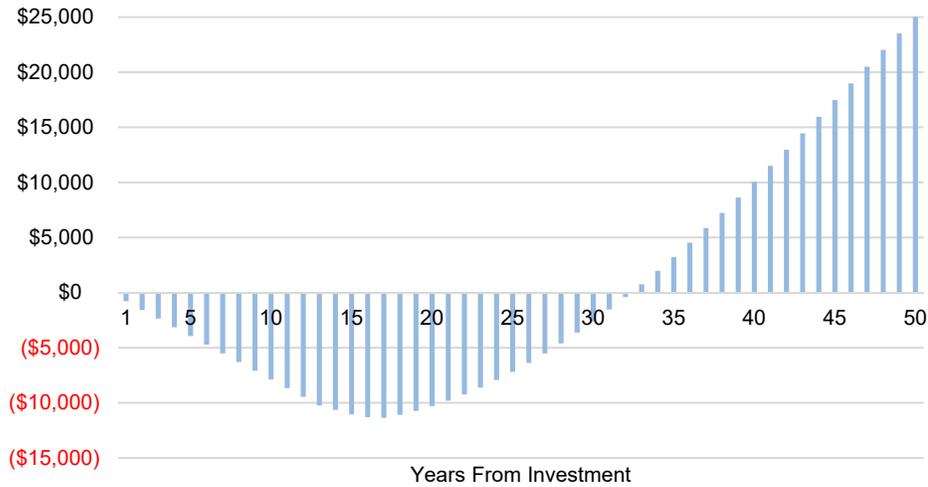
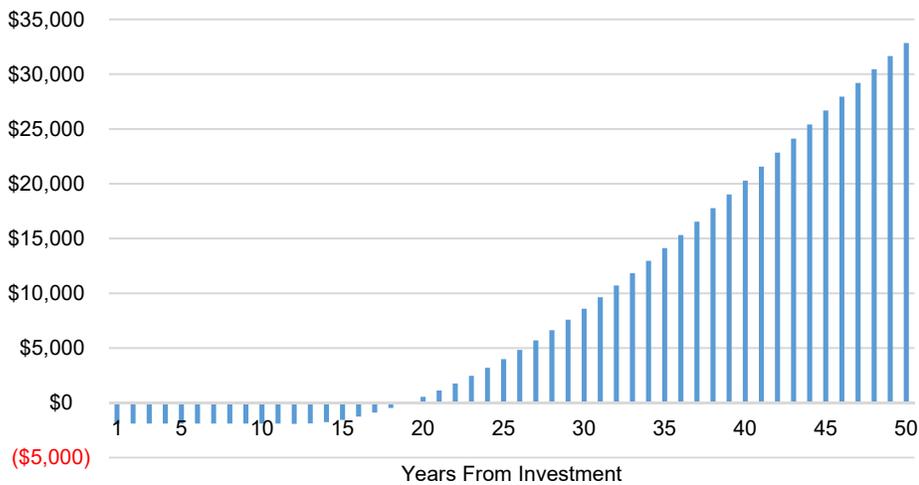


Chart 17. Cumulative Cash Flows - 10% Increase in Per-Pupil Expenditures



Source: Results First

Chart 18. Cumulative Cash Flows - Tutoring: By Adults, One-on-One, Structured



Source: Results First