NEW MEXICO'S ACADEMIC ACHIEVEMENT GAPS:
A SYNTHESIS OF STATUS, CAUSES, AND SOLUTIONS

A WHITE PAPER

	Nation G4 Math	NM G4 Math	Nation G8 Math	NM G8 Math	Nation G4 Reading	NM G4 Reading	Nation G8 Reading	NM G8 Reading
Advanced	7	3	8	3	8	4	3	1
Proficient	32	24	24	17	27	19	29	19
Basic	42	47	38	41	33	31	42	45
Below Basic	19	27	30	39	32	46	25	35
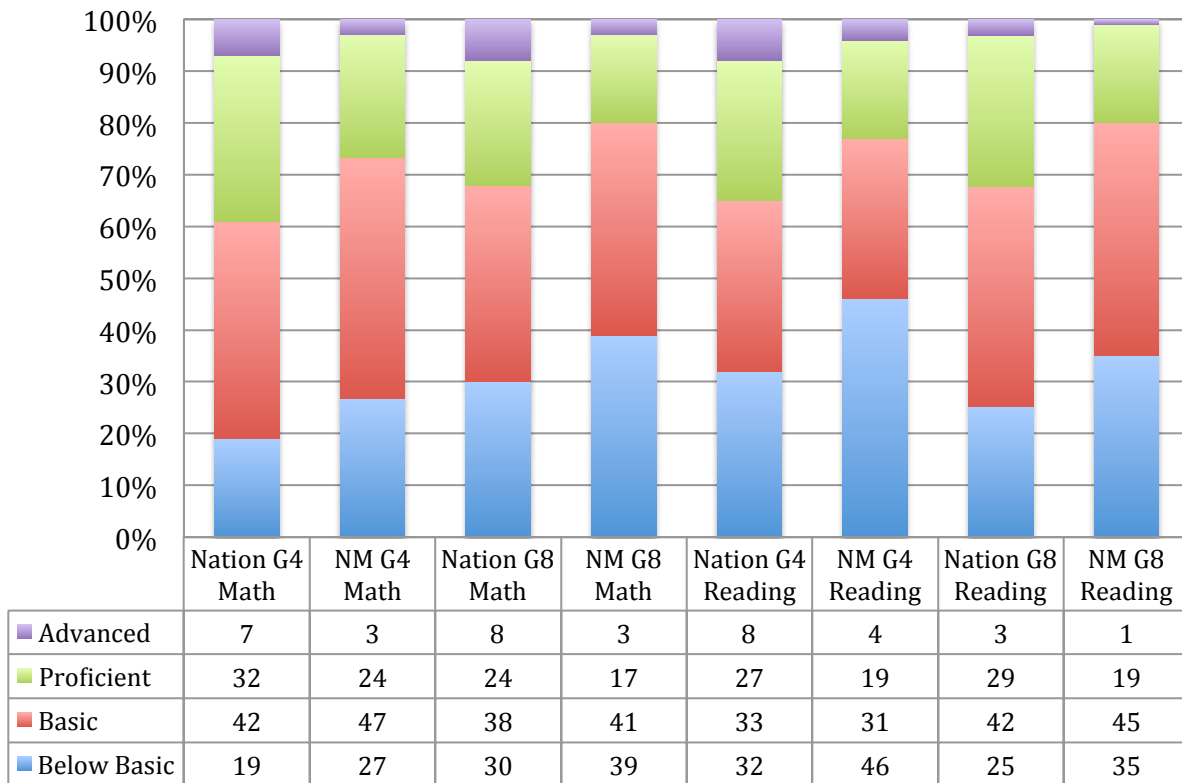
JULY 1, 2017

JOSEPH P. MARTINEZ, PH.D.
DIRECTOR OF RESEARCH AND EVALUATION
CENTER FOR POSITIVE PRACTICES

This analysis and synthesis of educational achievement gaps in New Mexico was requested by the New Mexico based **Coalition for the Majority**, which includes various institutions, organizations, and individuals supporting the *New Mexico English Learner Teacher Preparation Act.*

INTRODUCTION AND FOCUS

During the decades after Brown v. Board of Education there was terrific progress. Tens of thousands of public schools were integrated racially. During that time the gap between black and white achievement narrowed.

Jonathan Kozol (fired as a teacher for sharing a Langston Hughes poem)

The purpose of this *White Paper* is to review and synthesize some current research preferably conducted in New Mexico regarding the educational achievement gap faced by two academically lower-achieving ethnic sub-groups: Hispanic/Latino and Native American students. These ethnic populations account for 48 percent and 10.5 percent respectively of the total New Mexico population (USCB, 2015 update) and about 60 percent and 10 percent respectively of the state public education system (Ballotpedia, 2016).

Achievement gaps are most often thought of as the differences between population groups or subgroups based on average scores or the percentage of students falling into preset proficiency levels on standardized tests. For schools, closing the gap usually means narrowing the difference in the group scores, ideally with the goal of erasing the differences altogether.

The reasons for knowing about and understanding the importance of gaps are self-evident. Individual students as well as population subgroups who do less well in academics are more likely to be less productive in society and/or experience more hardships in life than their counterparts. In an egalitarian society, we must do all that we can to ensure that all students have equal opportunities and supports to succeed.

Regarding New Mexico, since 1992 the state education system as a whole has continuously performed well below the national average in mathematics, reading/language arts and science. Additionally, the within-state racial/ethnic gaps in educational achievement persist with little to no indication that significant progress in closing these gaps is on the horizon.

OUTLINE

This paper is divided into the following sections. 1) *The Achievement Gap Status*, including national and state-level educational achievement gaps and disaggregation by various population subgroups, 2) *The Causes of Achievement Gaps*, and 3) *Promising Practices for Reducing Gaps*.

METHODOLOGY

To keep this *white paper* manageable and meaningful for practical purposes, we put some parameters on what research should be included: 1) with limited exceptions, we chose to highlight *published* research that was *conducted in New Mexico*, which includes the major national assessments that included population samples from within the state, 2) we also chose to focus primarily on research conducted and published within the last 10 years, and 3) we gave priority to research that was *peer-reviewed* and/or met sufficient standards of qualitative and/or quantitative rigor, which includes *clarity* and/or *objectivity*, inclusion of the methodological description, and, in some cases, an adequate assessment of validity and reliability.

ACHIEVEMENT GAP STATUS

The literature on achievement gaps is vast, and it is easy to find gaps within gaps (e.g. between ethnic groups, within ethnic groups; as well as between grades and gender combined with socio-economic status, language proficiency, eligibility for special services, timeframes, and on and on). The gap combinations can become so complicated and intertwined that just analyzing the possibilities may result in *analysis paralysis*. To address the gaps for practical purposes, at the local level, we need to simplify and prioritize the issues as we know them, at a level that is practical and makes sense to us; otherwise, we risk getting overwhelmed and can end up doing less, or even nothing at all.

Therefore, we suggest, in general, that all stakeholders, including policymakers — and especially educators onsite in schools — first use the data and knowledge of patterns and trends that exists in order to save time and resources. There is an abundance of descriptive achievement gap research readily available, but there is an embarrassing scarcity of high-quality action-oriented research on what to do about it at the state and local level.

> The federal legislative story pertaining to academic achievement gaps and inequity in education is long and detailed. Knowing about these general trends may help us to understand why federal governance has tried but failed to solve the problem, and why it is the responsibility of all of us to be part of the solution. We provide a high-level overview of this story in *Appendix A: Legislative History*.

As the legislative history of addressing educational inequity informs us, we have known about the issue and effects of inequitable education for a long time. And, in all fairness, the federal government has taken steps to address the problem.

One of the chief goals of the *No Child Left Behind Act of 2001* (NCLB, 2002), under President George W. Bush, was to narrow the achievement gap for all definable subgroups, at the school level. This goal continues with the *Every Student Succeeds Act of 2015* (*ESSA*, 2015), signed late into the second term of President Barack Obama.

Still, neither presidential administration in this century was able to make notable progress in academic performance, based on international comparisons, or even in narrowing the racial/ethnic gaps in educational achievement at home. In fact, between 1965 and today, large educational achievement gaps among racial groups have persisted with only rare indications of very modest progress (Hanushek, 2016).
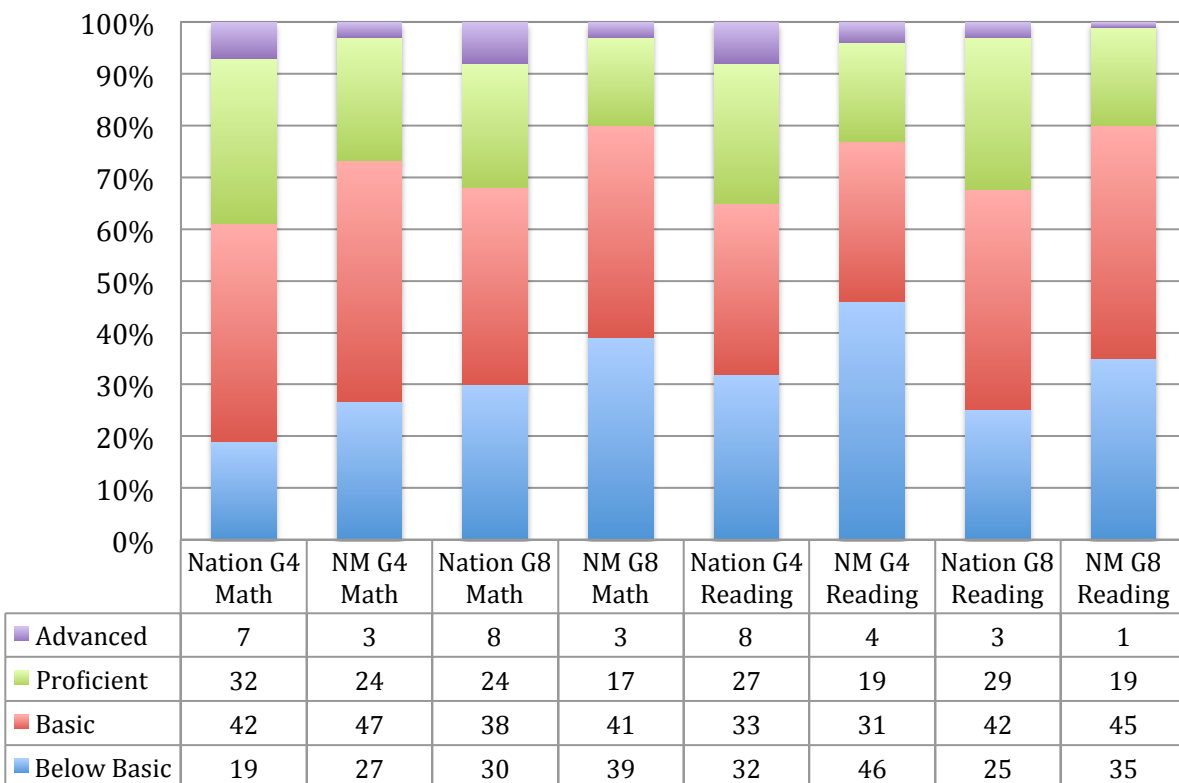
NATIONAL AND STATE-LEVEL EDUCATIONAL ACHIEVEMENT GAPS

Analyzing Proficiency. Throughout the body of the paper, we delineate how various student population groupings have performed academically at given levels in comparison to one another. For most assessments of academic achievement gaps, students' raw data is compiled into average scale scores, meaning that their raw scores are drawn from different categories or kinds of questions and then compiled into a single score. Collective scores can then be categorized into performance levels (aka achievement levels) such as *Below Basic*, *Basic*, *Proficient*, and *Advanced*, or equivalent categories, as required under the No Child Left Behind Act of 2001 (NCLB, 2002). Performance levels tell us a bit more than simple raw score averages (e.g. Group A scores higher than Group B by 50 points), and instead, we can

now see the percentage of students in all groups who score at a pre-specified level (e.g. the percentage of students who reach *proficiency*).

Below, we present a single chart illustrating the most recent state and national achievement levels in Grades 4 and 8 on the 2013-2015 NAEP as reported by the U.S. Department of Education (ED) at the National Center for Educational Statistics (NCES).

Figure 1. 2013-2015 National and State (NM) Math and Reading Assessments Snapshot.

	Nation G4 Math	NM G4 Math	Nation G8 Math	NM G8 Math	Nation G4 Reading	NM G4 Reading	Nation G8 Reading	NM G8 Reading
■ Advanced	7	3	8	3	8	4	3	1
■ Proficient	32	24	24	17	27	19	29	19
■ Basic	42	47	38	41	33	31	42	45
■ Below Basic	19	27	30	39	32	46	25	35

Note. The Chart above shows combined national and state results for grades 4 and 8 between 2013 and 2015. This chart shows *discreet* (the percentage of students that fall into each category) as opposed to *cumulative* (the percentage of students scoring at or above each category) achievement levels. *(Details for given breakouts may not sum to 100% because of rounding.)*

As shown in Figure 1 above, <u>most</u> grade 4 and 8 students nationally and within New Mexico, in general, did not reach national *Proficiency* or *Advanced* achievement levels in either reading or math on the NAEP assessments in combined school years between 2013 and 2015. New Mexico also consistently had a greater number of students not reaching proficiency levels than the national average. Although the exact percentages may change for other time frames, the same pattern persists where only a very small percentage of students reach *Advanced* levels while the large majority of students are clustered at the *Basic* and *Below Basic* levels.

Generalities

Based on NAEP results, New Mexico school children have for more than 20 years performed lower than the national average in what are often considered the fundamental
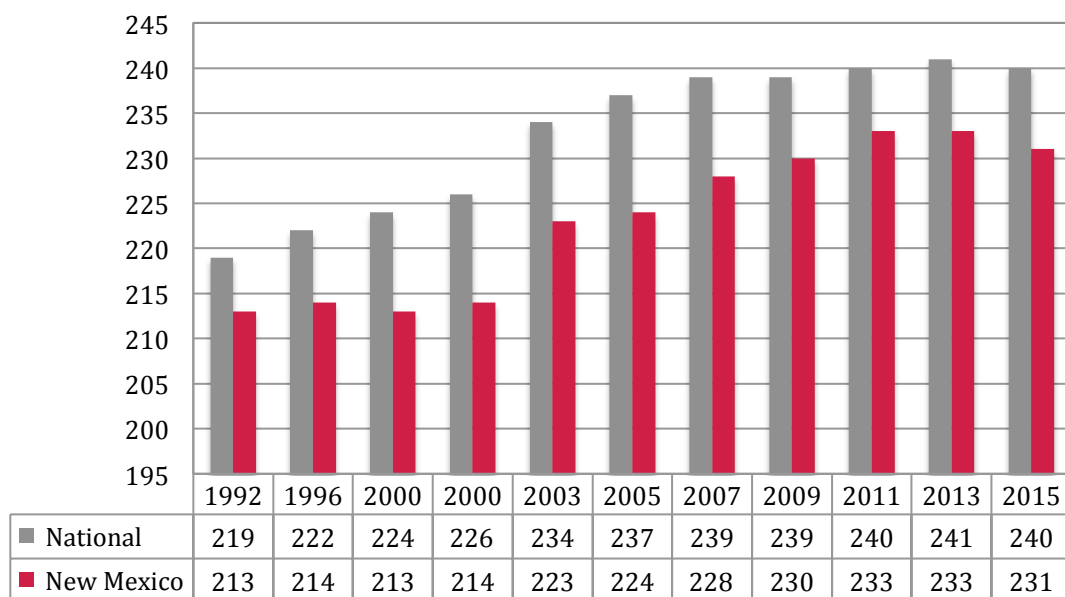
subjects of mathematics, reading, writing, and science. Math and reading scores are based scales of 0 to 500. Science and writing scores are based on scales of 0 to 300. All data in this subsection is derived from the NCES NAEP database.

Statistical Significance. When looking at data used for national, between-state, and in-state comparisons, we urge the reader to keep in mind the concept of *statistical significance*, a technical term used in statistics (particularly in hypothesis testing) that gauges whether actual results may be due to sampling error (or group equivalence, for example). For example, if the differences in test results between two groups are statistically significant, then we can have more confidence that the comparison results are likely real and meaningful.

When one explores the public-accessible NAEP Data Explorer (NDE) database for deeper pairwise comparisons, such as between groups or other variable combinations such as ethnicity, gender, location, proficiency, and years, the reports will typically identify which comparisons are statistically significant.
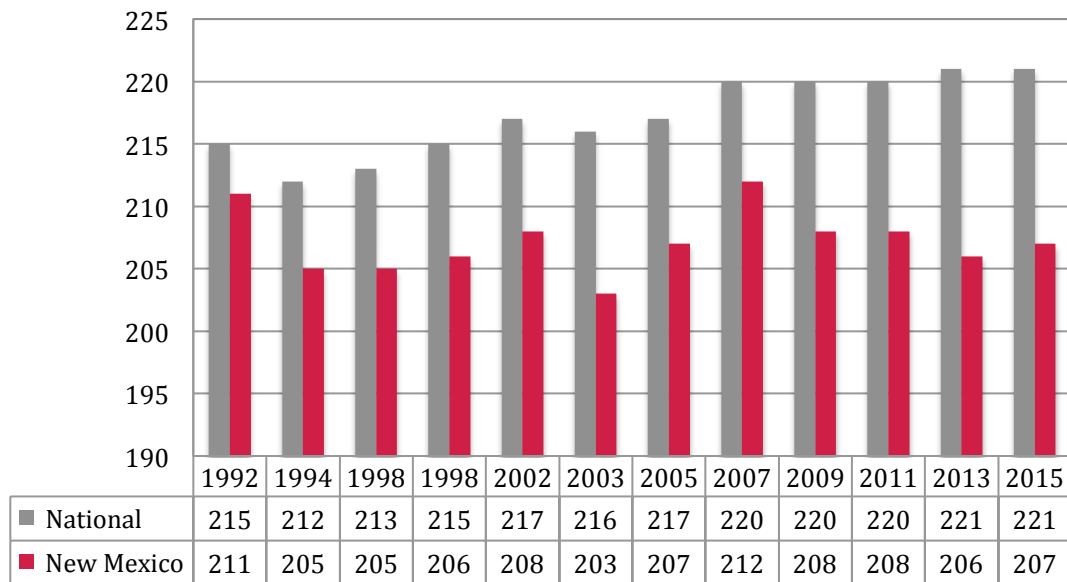
Some measurements may appear to be significant, or not, just based on their magnitude. For example, looking at Figure 2 below there is little doubt that there is a positive *significant difference* in New Mexico fourth grade mathematics test scores between two singular points in time: 1992 and 2015 (18 points); however, the gap size between the state and national average at those same two benchmarks has widened slightly (7 points and 9 points, respectively). The gain is likely significant, but the gap is likely not significant because the difference is only 2 points, which could easily be due to sampling error. This means that significant gains were made during the timeframe (a success), but the gap remains statistically insignificant, and therefore no progress has been made in that regard (a failure). Because there are seemingly endless possible combinations, we urge those readers who wish to delve deeper to try the NDE at http://nces.ed.gov/ on his or her own. It is reasonably easy to use and potentially revealing.

Figure 2. NAEP Grade 4 Math, national and state, for selected years.

	1992	1996	2000	2000	2003	2005	2007	2009	2011	2013	2015
■ National	219	222	224	226	234	237	239	239	240	241	240
■ New Mexico	213	214	213	214	223	224	228	230	233	233	231

Note. Based on raw scores for selected years, New Mexico fourth graders as a whole have never caught up to the national average in math.

Figure 3. NAEP Grade 8 Math, national and state, for selected years.

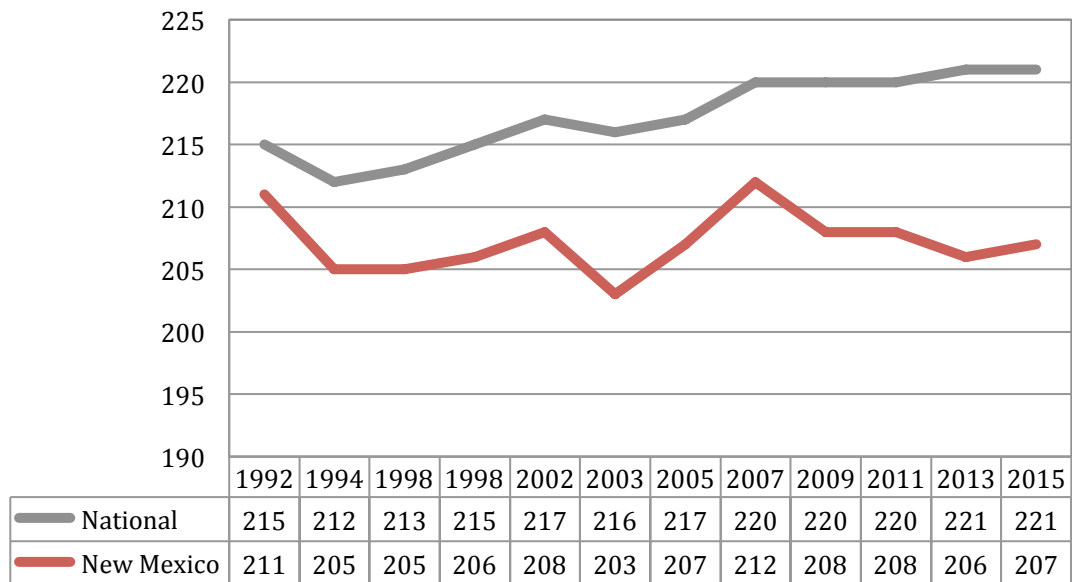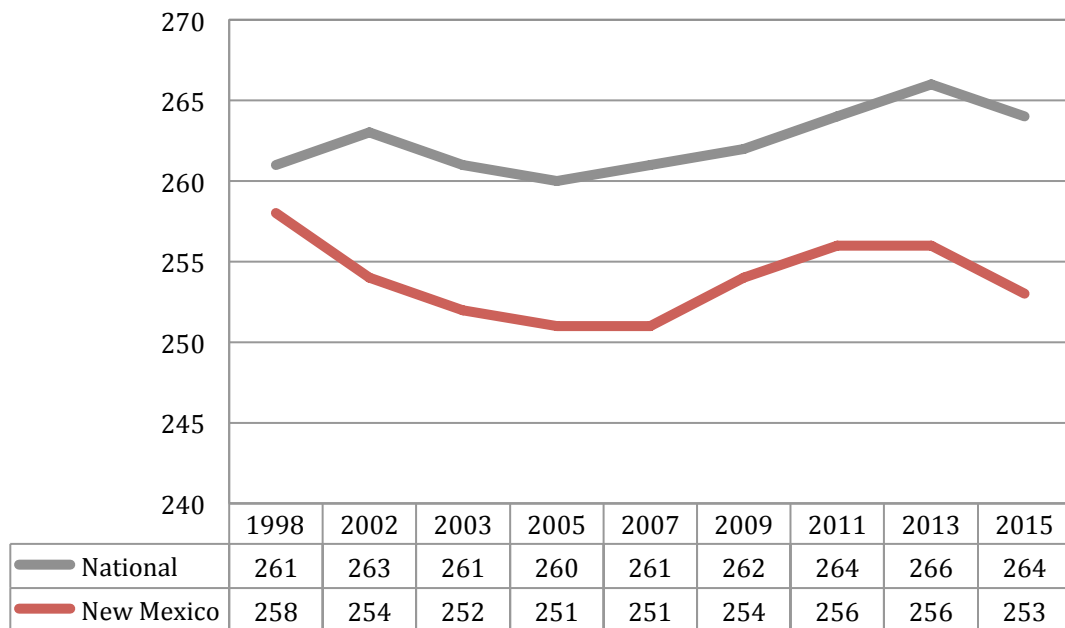|	1992	1994	1998	1998	2002	2003	2005	2007	2009	2011	2013	2015
■ National	215	212	213	215	217	216	217	220	220	220	221	221
■ New Mexico	211	205	205	206	208	203	207	212	208	208	206	207

Note. Based on raw scores for selected years, New Mexico eighth graders as a whole have never caught up to the national average in <u>math</u>.

Figure 4. NAEP Grade 4 Reading, national and state, for selected years.

	1992	1994	1998	1998	2002	2003	2005	2007	2009	2011	2013	2015
National	215	212	213	215	217	216	217	220	220	220	221	221
New Mexico	211	205	205	206	208	203	207	212	208	208	206	207

Note. Based on raw scores for selected years, New Mexico fourth graders students as a whole have never caught up to the national average in <u>reading</u>, but interestingly the state came close in 1992.

Figure 5. NAEP Grade 8 Reading, national and state, for selected years.

	1998	2002	2003	2005	2007	2009	2011	2013	2015
National	261	263	261	260	261	262	264	266	264
New Mexico	258	254	252	251	251	254	256	256	253

Note. Based on raw scores for selected years, New Mexico eighth graders as a whole have never caught up to the national average in <u>reading</u>, but the state's participants came close in 1998.

Longitudinal Patterns

When one looks closely at the charts above, it becomes apparent that there was a time when the gap between New Mexico and the national average was smaller. For example:

- In 1992, the gap between New Mexico and the national average on NAEP <u>mathematics</u> for grades 4 and 8 was smaller than at any time thereafter.

- In 1992 for Grade 4 and 1998 for grade 8, the gap between New Mexico and the national average on NAEP <u>reading</u> was smaller than at any time thereafter.

This longitudinal pattern of widening gaps suggests that New Mexico may have been doing something statewide more effectively early on than in later years. Similarly, researchers have noticed that the gap nationally between minority and white students was more narrow in the 1970s and 1980s, perhaps due in part "because minority students were exposed to greater resources and academic content" (Harris & Herrington, 2006).

State Rankings

Table 1. NAEP 2015 NM and National/State Rankings by Subject and Grade.

GRADE 4	All	Boys	Girls	Black	Hispanic	White	FRPL Eligible	FRPL Not Eligible
Math	51	50	52	‡	31	48	43	51
Reading	52	52	52	‡	42	49	48	51
Science	44	44	45	15	35	38	40	39
Writing	40	41	39	‡	17	35	37	29
GRADE 8	**All**	**Boys**	**Girls**	**Black**	**Hispanic**	**White**	**FRPL Eligible**	**FRPL Not Eligible**
Math	48	47	49	‡	36	43	42	46
Reading	50	50	50	‡	44	46	47	51
Science	44	43	44	‡	35	39	37	44
Writing (2007)	45	44	45	‡	26	40	37	42
Grade 12	**All**	**Boys**	**Girls**	**Black**	**Hispanic**	**White**	**FRPL Eligible**	**FRPL Not Eligible**
Math (2013)	‡	‡	‡	‡	‡	‡	‡	‡
Reading (2013)	‡	‡	‡	‡	‡	‡	‡	‡

Note. ‡ = subgroup did not participate or reporting standards were not met. State rankings and comparisons include the District of Columbia and the national aggregate. Jurisdictions most often falling below New Mexico include Alabama, Mississippi, and/or the District of Columbia.

2015 State Rankings. As depicted in the 2015 chart above, with just a few exceptions, New Mexico as a whole frequently ranks near the bottom across grades and academic subjects when compared to all 50 U.S. states, the territory of Puerto Rico (when included), and the District of Columbia. Other results include:

- **Gender** disaggregation shows that New Mexico boys and girls perform about the same in national rankings;

- **Ethnicity** disaggregation shows that there are a few bright spots when various ethnic groups are compared nationally with their peers on the NAEP assessments for science and writing. New Mexico black students did fairly well in Grade 4 science, ranking 15th when compared with their national peers. New Mexico Hispanics in Grades 4 and 8 writing also showed bright spots, ranking 17th and 26th, respectively.

- **Free or Reduced-Priced Lunch (FRPL)** disaggregation indicates students who are eligible for free or reduced price lunch (FRPL) under the National School Lunch Program (that some consider an indication of family socio-economic status). FRPL-eligible students seem to perform modestly better in New Mexico than do non-FRPL-eligible students when compared to their respective peer groups.

Other Longitudinal Patterns

Other longitudinal patterns worth noting include:

Ethnicity. When student groups are disaggregated nationally, we consistently see the following groups scoring as follows in descending order: Asian, White, African-American, Hispanic, and Native American.

Special Services. The same pattern, but with larger percentages at lower levels, typically repeats itself when many student groups are disaggregated by *ethnicity* and *special services* such as Students with Disabilities (SWD), students with 504 plans, and English-Language Learners (ELLs), or simply English Learners (ELs).

Gender. Girls as a group consistently perform at higher levels than boys on reading, and boys consistently perform better in mathematics. Not every year, however, is the difference *statistically significant*.

> While this paper is not the place to debate the adequacy or agreeability of various ethnicity and special services descriptors, we typically use the population subgroup terms as they appear in the federal and state legislation and/or as they are referenced in the pertinent document source. Therefore, for example, we may see the term *Hispanic* in some charts and *Latino* in others.

Native American National/State Comparisons

Native American students' trends and patterns do not necessarily match well with other state comparisons because many states are not as fortunate as New Mexico to have a large Native American population. The state, therefore, is included in the National Indian Education Study (NIES, 2016) that seeks to compare the NAEP math and reading results for various Native American populations across the nation and with the national average as a whole, as depicted in the charts below.
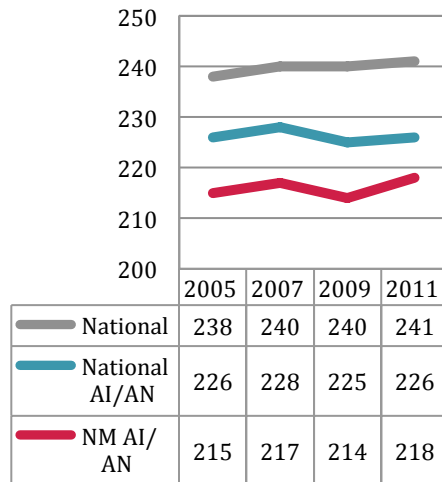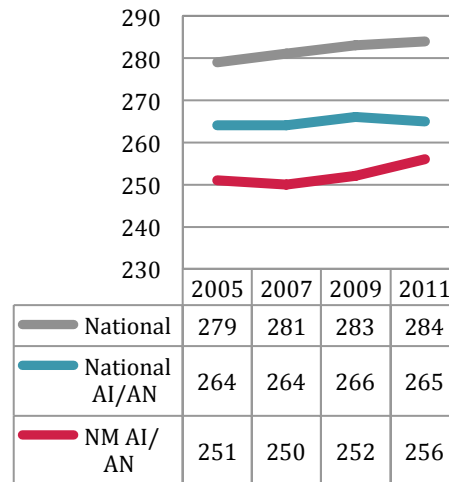
Figure 6. Grade 4 Mathematics.

	2005	2007	2009	2011
National	238	240	240	241
National AI/AN	226	228	225	226
NM AI/AN	215	217	214	218

Figure 7. Grade 8 Mathematics.

	2005	2007	2009	2011
National	279	281	283	284
National AI/AN	264	264	266	265
NM AI/AN	251	250	252	256

Figure 8. Grade 4 Reading.

	2005	2007	2009	2011
National	219	221	221	221
National AI/AN	203	204	204	202
NM AI/AN	186	193	188	190

Figure 9. Grade 8 Reading.

	2005	2007	2009	2011
National	262	263	264	265
National AI/AN	249	247	251	252
NM AI/AN	236	233	236	240

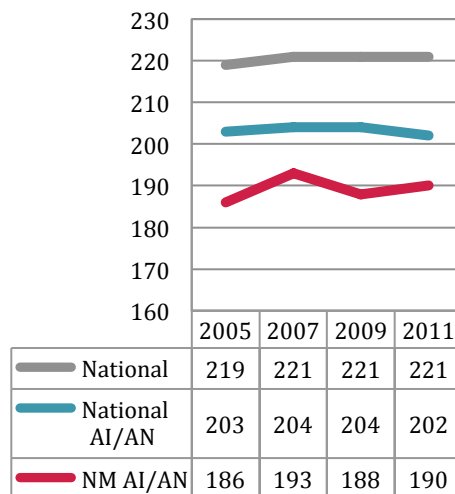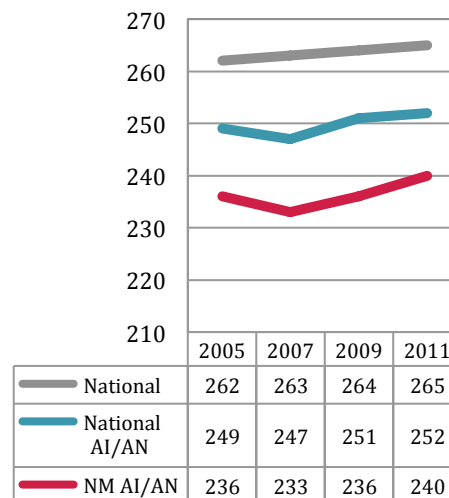*Note*. NM = New Mexico. AI/AN = American Indian/Alaska Native. AI/AN subgroups include data from both public and BIE schools. The figures above show a consistent trend in average scale scores across fourth and eighth grades for both NAEP mathematics and reading. New Mexico American Indian students perform below the national American Indian average which itself is well below the national average for all students.

WITHIN-STATE EDUCATIONAL ACHIEVEMENT GAPS

For most recent and past data analyses, and compliance with federal legislation, New Mexico has for most assessments used four achievement levels: *Beginning Step, Nearing Proficiency, Proficient,* and *Advanced.* For standardization and comparison with most national assessments, some analysts, such as Center on Education Policy (CEP), find equivalence with New Mexico's *Beginning Step* as *Below Basic*, *Nearing Proficiency* as *Basic,* and *Proficient* and *Advanced* as the same*.*

The NAEP, therefore, is likely the best system available to gauge how a given state is doing in comparison to other states and the nation. That is because state-specific tests are not parallel with the NAEP and therefore the percentages of students reaching proficiency, for example, would be very unlikely to be the same.

The educational achievement gaps within New Mexico, however, are fundamentally the same as the nation, and like the nation, the educational system in New Mexico has been chronically unable to significantly close the achievement gaps among population subgroups.

Within-state Ethnicity. When disaggregated by ethnic population subgroups, New Mexico students follow the same pattern as with the national assessments.

Within-state Special Services. When student groups are disaggregated by special services, we also see these subgroups achieving at lower levels when compared to other groups both nationally and within the state.

Just the Facts

In this section we highlight a limited number of data points that illustrate the overall essence of the achievement gap status in New Mexico at various points in time. Keep in mind that not all minor differences in test results may be *statistically significant*.

Almost all of the data provided below comes from two valuable resources: The state education agency, that is the New Mexico Public Education Department (NMPED/PED), in particular the PED Assessment & Accountability Division (PED-AAD) and the CEP (see for example, CEP 2009a, 2009b).

The PED-AAD provides a thorough and easily accessible disaggregation of federally required statewide, district, and school test results (NMPED, 2016a). Schools and other stakeholders can readily access these data on the PED's website; however, there have been some long delays in processing and releasing some test results over the last couple of years.

CEP is a national, independent organization and an "advocate for public education and for more effective public schools." CEP has deconstructed many state and national assessments, included for New Mexico, in order to provide the public in each state with a clearer picture of the status and trends of their educational performance and achievement. CEP frequently analyzes results from statewide assessments to explore more complex disaggregation of multi-year results according to various population subgroups that include ethnicity, socio-economic status, gender and special services (including English-language proficiency, students with disabilities, and/or 504 status).

In the past, New Mexico assessments used for NCLB accountability included the *New Mexico Standards Based Assessment* (SBA) and the *New Mexico Alternate Performance Assessment* (NMAPA). Previous to 2005, New Mexico administered various versions of the *TerraNova/CTBS (Comprehensive Test of Basic Skills)* from CTB/McGraw-Hill, which has since been refined and is now owned by Data Recognition Corporation (DRC). Beginning in

2015, the state began using the *Partnership for Assessment of Readiness for College and Careers* (PARCC) Test that is owned by Pearson, a large educational products corporation.

Trends and Comparisons. With the introduction of the PARCC, which uses a five-level (*Level 1 - Level 5*) system of reporting, finding equivalence with four-level assessment results, such as the performance levels at NAEP, may be even more confusing, non-equivalent, or ambiguous. This is compounded by the fact that New Mexico has changed its assessments rather frequently. For example, PED-AAD (NMPED, 2016a) released its results of SEA required assessments with this notice:

> *In 2015 new assessments were added that preclude reporting by level or by scaled score. These proficiencies include SBA Spanish Reading, SBA Science, NCSC ELA & MATH, NMAPA Science, PARCC ELA & MATH, DIBELS Reading.*

> We do not wish to give the impression that due to frequent assessment changes it is too complicated or perhaps less meaningful to analyze New Mexico assessment trends and comparisons. We simply have to remain aware of the patterns that come with change and keep these in mind when investigating trends. For example, New Mexico proficiency levels may clearly appear to be much higher in 2014, before the PARCC, than in 2015 and 2016. And proficiency levels in 2016 appear to show slight gains from 2015, indicating a slight upward trajectory, for the PARCC at least, over the last year.

Various disaggregated results for New Mexico over the past few years are presented below.

Gender

Reading. The same pattern described nationally generally holds true for New Mexico; however, the statewide gender gap appears to be smaller.

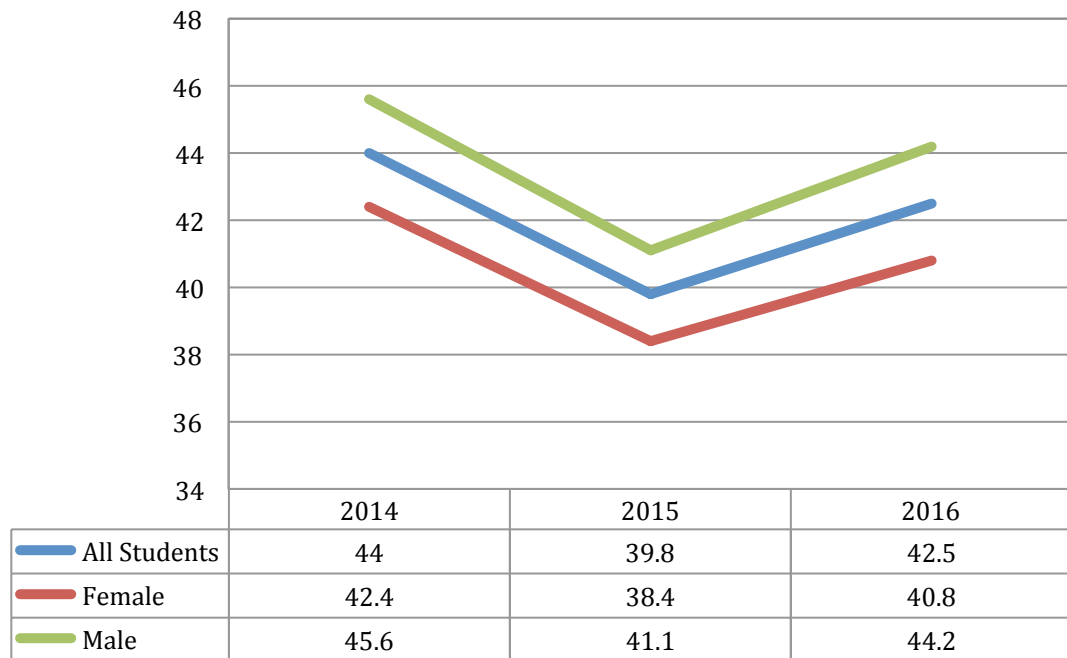**Figure 10. New Mexico Reading Proficiency by Year and Gender.**

	2014	2015	2016
All Students	49	33.3	37
Female	54	37.9	42
Male	44.1	28.9	32.2
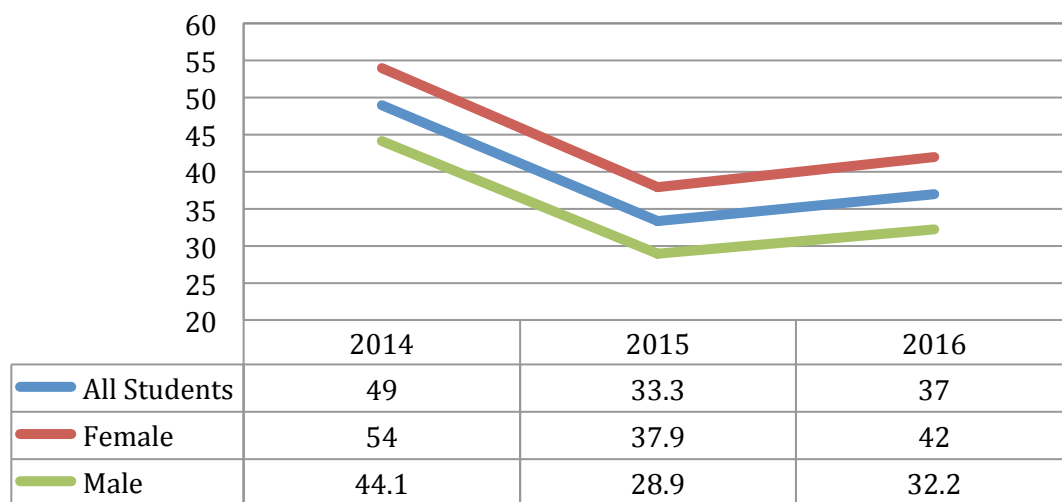
Note. New Mexico girls consistently perform modestly better than boys in all grades combined in reading. Source: NMPED.

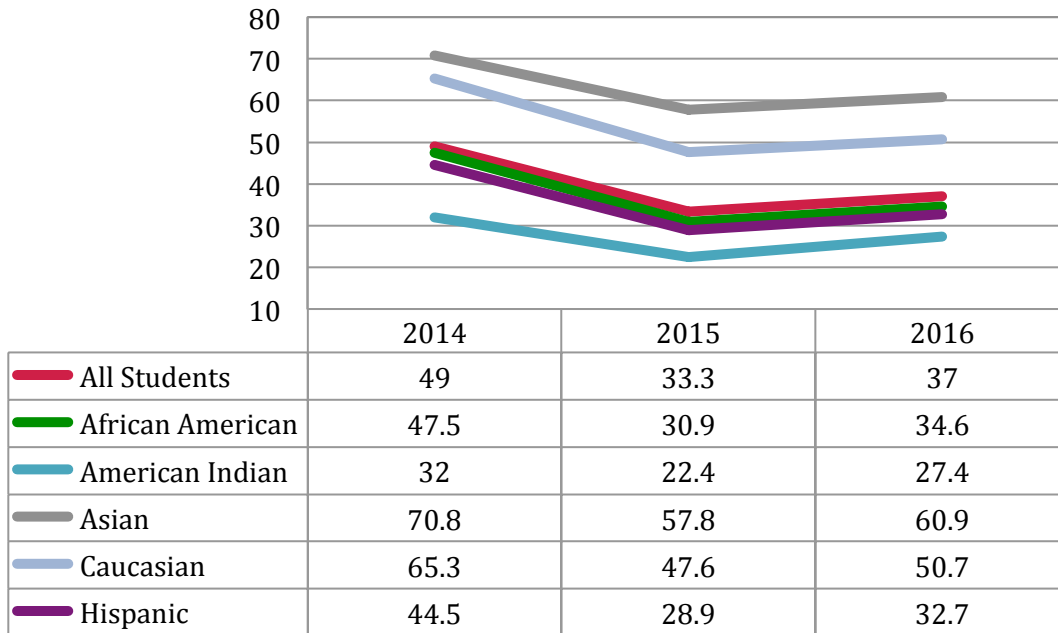**Figure 11. New Mexico Mathematics Proficiency by Year and Gender.**

	2014	2015	2016
All Students	40.7	17.6	20.2
Female	40.8	17.6	20.4
Male	40.7	17.5	20
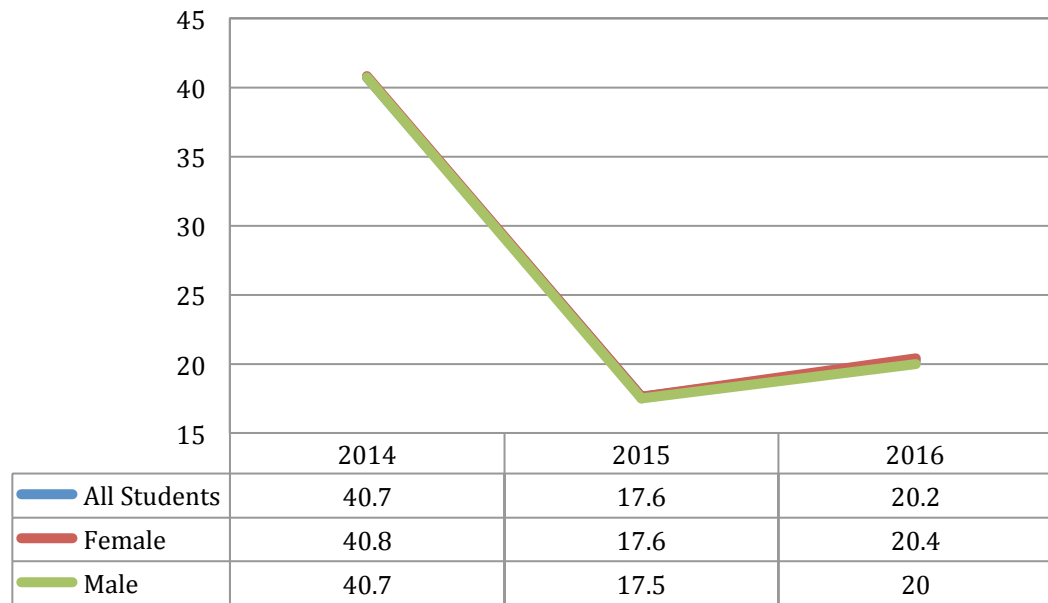
Note. New Mexico boys and girls consistently perform in all grades combined the same in math. There is no significant difference. Source: NMPED.

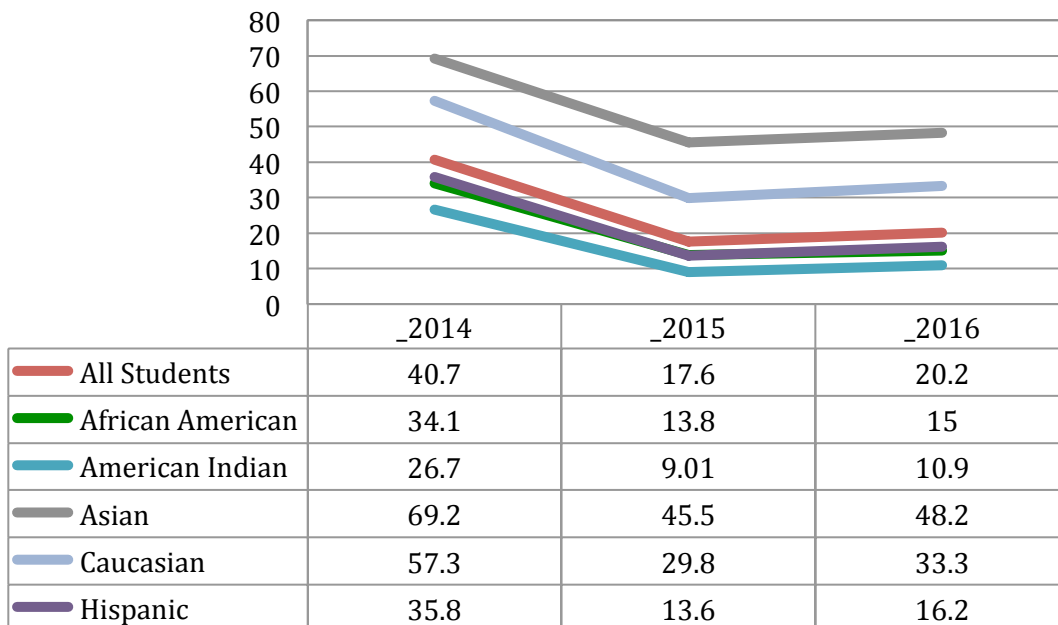**Figure 12. New Mexico Science Proficiency by Year and Gender.**

	2014	2015	2016
All Students	44	39.8	42.5
Female	42.4	38.4	40.8
Male	45.6	41.1	44.2

Note. New Mexico boys consistently perform in all grades combined slightly higher than girls in science. Source: NMPED.

Figure 13. New Mexico Reading Proficiency by Year and Ethnicity.

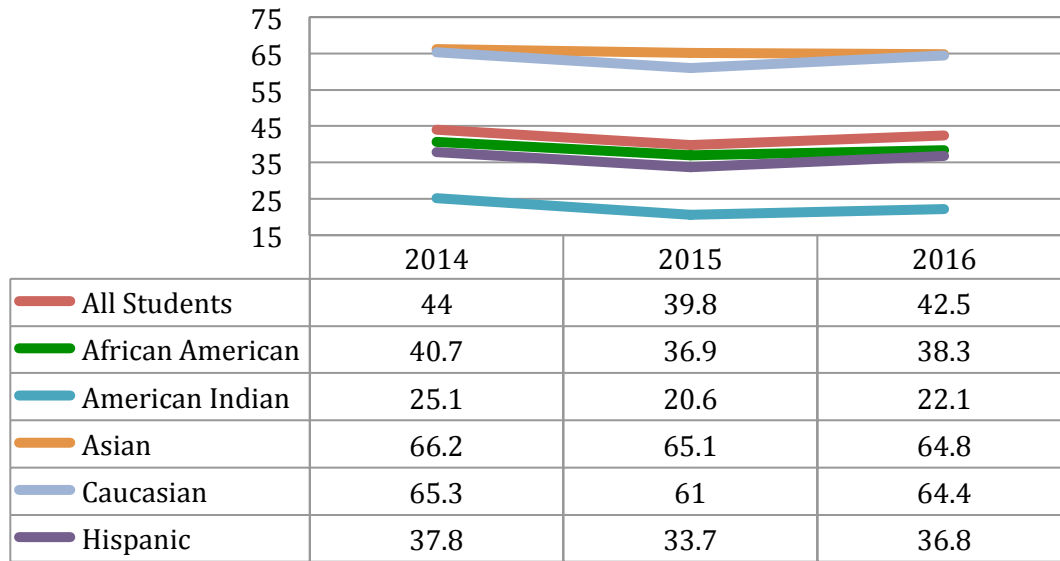|	2014	2015	2016
All Students	49	33.3	37
African American	47.5	30.9	34.6
American Indian	32	22.4	27.4
Asian	70.8	57.8	60.9
Caucasian	65.3	47.6	50.7
Hispanic	44.5	28.9	32.7

Note. When disaggregated by ethnicity, American Indians and Hispanics perform in all grades combined the lowest in <u>reading</u> proficiency. Source: NMPED.

Figure 14. New Mexico Mathematics Proficiency by Year and Ethnicity.

	_2014	_2015	_2016
All Students	40.7	17.6	20.2
African American	34.1	13.8	15
American Indian	26.7	9.01	10.9
Asian	69.2	45.5	48.2
Caucasian	57.3	29.8	33.3
Hispanic	35.8	13.6	16.2

Note. When disaggregated by ethnicity, American Indians and Hispanics perform in all grades combined the lowest in <u>mathematics</u> proficiency. Source: NMPED.
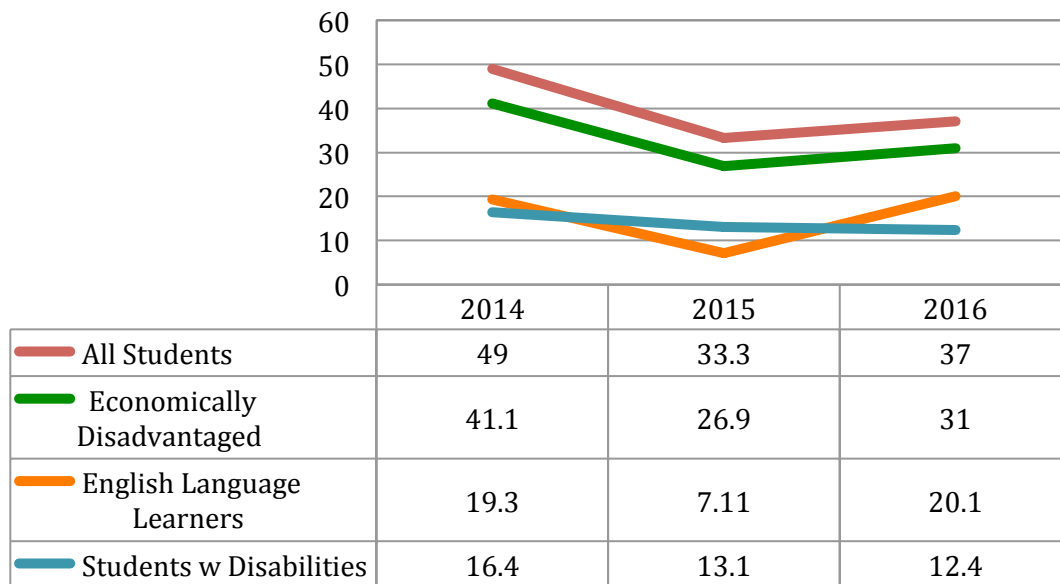
Figure 15. New Mexico Science Proficiency by Year and Ethnicity.

	2014	2015	2016
All Students	44	39.8	42.5
African American	40.7	36.9	38.3
American Indian	25.1	20.6	22.1
Asian	66.2	65.1	64.8
Caucasian	65.3	61	64.4
Hispanic	37.8	33.7	36.8

Note. When disaggregated by ethnicity, American Indians and Hispanics perform in all grades combined the lowest in <u>science</u> proficiency. Source: NMPED.
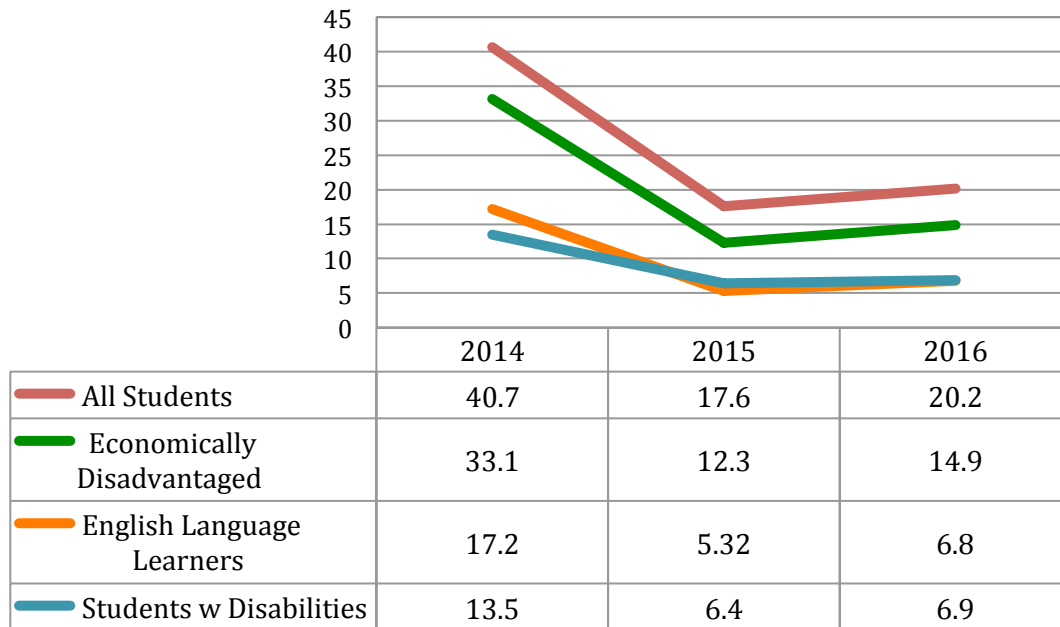
Disaggregation by Special Services

Figure 16. New Mexico Reading Proficiency by Year and Special Services.

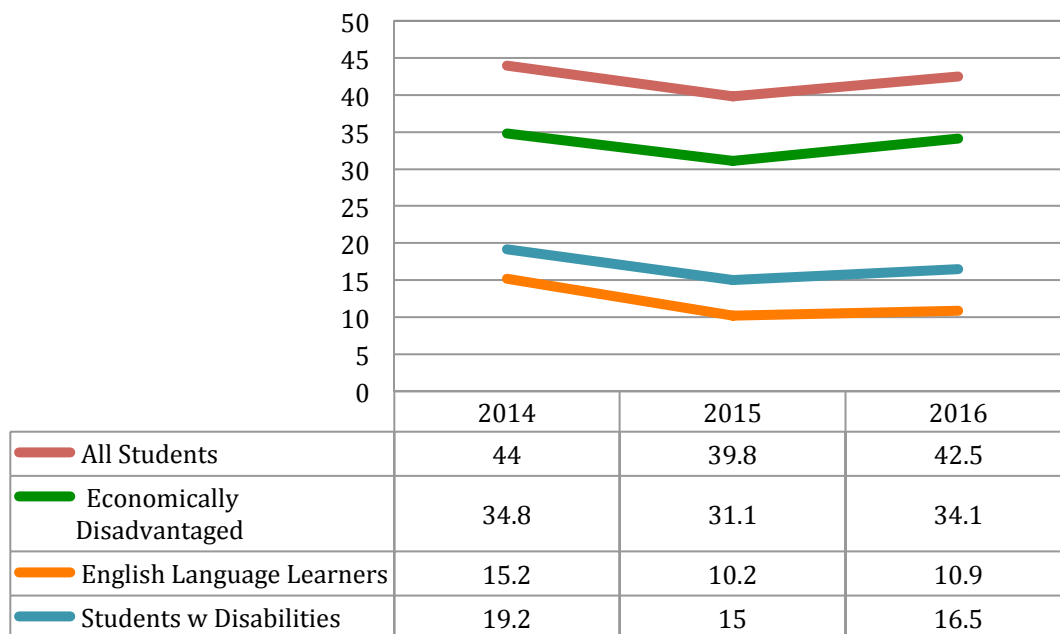|	2014	2015	2016
All Students	49	33.3	37
Economically Disadvantaged	41.1	26.9	31
English Language Learners	19.3	7.11	20.1
Students w Disabilities	16.4	13.1	12.4

Note. When disaggregated by *special services*, English Learners and Students With Disabilities perform in all grades combined the lowest in <u>reading</u> proficiency. Source: NMPED.

Figure 17. New Mexico Mathematics Proficiency by Year and Special Services.

	2014	2015	2016
All Students	40.7	17.6	20.2
Economically Disadvantaged	33.1	12.3	14.9
English Language Learners	17.2	5.32	6.8
Students w Disabilities	13.5	6.4	6.9

Note. When disaggregated by *special services*, English Learners and Students With Disabilities perform in all grades combined the lowest in <u>mathematics</u> proficiency. Source: NMPED.

Figure 18. New Mexico Science Proficiency by Year and Special Services.

	2014	2015	2016
All Students	44	39.8	42.5
Economically Disadvantaged	34.8	31.1	34.1
English Language Learners	15.2	10.2	10.9
Students w Disabilities	19.2	15	16.5

Note. When disaggregated by *special services*, English Learners and Students With Disabilities perform in all grades combined the lowest in <u>science</u> proficiency. Source: NMPED.

ACHIEVEMENT GAP CAUSES

We wish to operationalize our understanding of the term *cause*. Most of what is often referred to as the *cause* of an achievement gap is not a *cause* at all; rather, it is most often an association or correlation of descriptive variables or multivariate constructs or factors. For example, an ethnic identity is not a cause of an achievement gap any more than is a child's home language or socio-economic status (Teach for America, 2011a, 2011b). We know, however, that children associated with these descriptors may experience greater challenges, but we also know that it is the challenges presented by the situation that are truly the cause. For example, non-English proficient children may perform lower on English-based assessments, and the causes may be because they are not adequately prepared to take the assessment, or because the assessment is not in their home language. The causes may be many, but the children themselves are not the cause.

SEGREGATION, DESEGREGATION, AND INTEGRATION

While the 700-plus pages of the Coleman Report was packed with detailed charts and data tables and launched an avalanche of speculation as to why black students consistently scored lower than white students, there has to date been no consensus on why the ethnic group gaps persist. For many, the report gave substance to the widespread belief that segregation between the schools, and thus inequities in the quality of education, was the primary reason, thereby influencing the national conversation and the nation's highest courts as to the value of desegregation.

To say that desegregation has not helped to close the gaps, however, is to either ignore the early successes it had, particularly before the 1990s (Harris & Herrington, 2006) or to assume that it was fully implemented on a sufficient scale. For example, scholars from The Century Foundation *(Potter, Quick, & Davies, 2006)* say this:

> *... more than sixty years after Brown v. Board of Education, American public schools are still highly segregated by both race and class. In fact, by most measures of integration, our public schools are worse off, since they are now even more racially segregated than they were in the 1970s, and economic segregation in schools has risen dramatically over the past two decades.*

UNITS OF ANALYSIS

According to the National Institutes of Health, Human Genome Research Institute "All human beings are 99.9 percent identical in their genetic makeup" (NIH, 2016). That should put to rest any speculation that race and ethnicity contribute to the cause of student subgroup differences in academic achievement.

There is also no shortage of logical debate and speculation about other possible root causes of educational achievement gaps between and within disaggregated subgroups. These include an unlimited *multivariate array* of personal, socio-cultural, economic, environmental, political, structural and systemic influences. And, just about everything that happens in the lives of children, both in and out of school — including demographics, school processes, perceptions, and student learning (Bernhardt, 1998) — contribute to how well they do academically.

As an example of a *multivariate array*, we can say that a child is influenced by the various cultures of her state, followed by the culture or cultures of her community, her neighborhood, her school, her family and friends, and her unique experiences. We can take

this so far that once again we risk entering a state of *analysis paralysis*, or at least a point of diminishing returns.

This is not to say that we should ever let up on how we provide individual attention to individual children; rather, if we wish to ever resolve inequities at the group level, we may need to consider group-level or even systemic interventions.

The big causes are systems-oriented. Therefore, we suggest that *primary causes* of unequal academic achievement would be those elements coming from the school and social systems themselves that affect the most students within each of their subgroups. Other causes and reasons may also be valid and impactful as well, but the bulk of our efforts should be placed where we have the best chances of making a major difference, or at least a significant difference, at the collective level. For that to happen, we have to accept as a truism that the system is at fault, not the child or her community.

The American Federation of Teachers (AFT, 2004) looked at a long list of specific challenges facing Hispanic/Latino students.   Most of those items on the list probably pertain to all lower-performing students, and include, for example, the following:

- Disproportionate attendance at resource-poor schools;
- Lack of access to fully qualified teachers;
- Lack of participation in rigorous, college-preparatory coursework; and,
- Parents with low-household incomes and low levels of formal education.

Related to Ethnicity

Regarding student characteristics, Renée Delgado-Riley (2014), a then Ph.D. candidate of the University of New Mexico (UNM) addressed the issue of the mathematics achievement gap among third and fifth grade White and Hispanic students in a large urban school district. Delgado sought to address the gap trends over time and to explore whether controlling for student factors other than ethnicity (e.g. gender, free-and-reduced-priced lunch, and English proficiency) could at least partially explain disparate achievement results. Even when controlling for these other variables, she found that a significant mathematics achievement gap between Hispanic and white students remained overall, but also that Hispanic students had a slower growth rate in grades 3 to 5, with that gap widening and therefore suggesting that the schools under study were not on track to close the gap with their white student peers.

Hispanics. The academic achievement gaps between Hispanic/Latino students, Asian, black, and white students is a well-known conundrum that has kept plenty of researchers busy for many decades. It would almost be easier to make an inventory of what historically has not worked to close the gap than what has been successful.

> The term *Hispanics* itself is an umbrella term for many diverse populations, often coming from many distinct cultures, nationalities, and experiences. Within New Mexico, most Hispanics are mestizos, a diverse blend of European, African, and American indigenous ancestries. Some Hispanic families in New Mexico arrived as recently as the current generation and most others as far back, on their European side, to early colonial settlers more than 400 years ago. And, of course, their Hispanic/Indigenous genetic admixture can range from hundreds to thousands of years to as recent as current generations.

The fact is, ethnicity is not a cause of low academic performance; plenty of Hispanics nationwide achieve at greater levels. As a general population group, however, the reasons for the gap are likely social, stemming from historical clashes with other peoples that has left the population with less land and resources; less long-term economic stability and security; less equity in education; and, less supportive attention and/or compensation for historical discrimination, in real terms (like targeted appropriations for economic recovery and social investments), from the state and federal systems as a whole.

Rubén G. Rumbaut (2006), writing for the National Research Council (US) Panel on Hispanics in the United States, sponsored by the National Institutes of Health, summarizes many of the points made above and below by stating "the continuation of present trends portends widening social and economic inequalities in the Hispanic population, segmented by national origin and generation."

Native Americans. The academic achievement gaps between Native American students and other students of standardized ethnic group descriptions at the state and federal levels are often large and perennially persistent.

Demmert, Grissmer, and Towner (2006), published in the *Journal of American Indian Education*, tried to make sense of the Native American low academic achievement. They did secondary analyses on national datasets, including the Early Childhood Longitudinal Study of Kindergarten Students (ECLS-K) and found the following:

- Native American children entering kindergarten performed about 27 percentile points behind whites, 12 points behind black students, and 10 points behind Hispanics in reading;

- Native American kindergarten children performed about 27 percentile points behind whites, eight points behind black students, and two points behind Hispanics in math;

The takeaway from this part of their study is that Native American children do not enter formal schooling at equitable levels. The authors also found, including reflecting on several years of research, that other than test results, the research on the academic achievement of Native Americans is frequently below standard and therefore does not yield a great deal of useful information.

Commonalities. A major focus of this paper is on the academic achievement gap facing Hispanic and Native American students. Although researchers often investigate the issue for either one of these populations in isolation, there are commonalities in both their ethnic admixtures (many Native Americans in New Mexico are part Hispanic, and vice versa) as well as the underlying social, political, and economic causal factors for low student achievement.   According to Demmert et al. (2006):

> *... there are a common set of characteristics that can account for low achievement across both majority and minority groups. However, minority groups have a higher incidence of such characteristics and thus lower scores than the majority group.*

In other words, individual low-achieving students, regardless of ethnic group, may have higher rates of poverty and therefore may be more likely to be adversely affected by a greater number personal and social risk factors. Because certain groups as a whole, such as Hispanics and Native Americans, are more likely to experience higher rates poverty, their groups are more likely to perform academically at lower levels.

Additionally, class status is highly influenced by academic achievement (Harris & Herrington, 2006), so lower-quality schooling and social class are in fact reciprocal.

Socio-Economic Status

There is a definite gap in average test scores between students from rich and poor backgrounds. As Potter, Quick and Davies (2016) put it:

> Today, the gap in average test scores between rich and poor students (those in the ninetieth and tenth percentiles by income, respectively) is nearly twice the size of the gap between white and black students.

Quinn (2014, 2015), for example, conducted multivariate regression analyses on data from the Early Childhood Longitudinal Study, Kindergarten (ECLS-K). That analyses found that while socio-economic status (SES) explains much of the gap in math and reading between black and white children as they enter kindergarten, it does not explain why the achievement gap in those subjects continues to widen over the school year. Quinn also used an ECLS-K assessment of executive functioning (working memory) included in the ECLS-K data but found that the gap in executive functioning did not widen over the school year, suggesting that the achievement gaps widened due to content and not to student capabilities or readiness.

There obviously is a common pattern occurring between SES and academic performance, and many scholars are taking note. For example, Arizona State University professor, David C. Berliner (2013) conducted an analysis of extant data from the Program for International Student Assessment (PISA) and the international Trends in Mathematics and Science Study (TIMSS) reports. He found that test performance was strongly correlated with inequality of income: the higher the family income, the higher the students' test scores. He suggests that looking at resolving income inequality through improvement in national economic policies may be the most productive opportunity we have for reducing the academic achievement gap. Stanford University professor, Sean F. Reardon (2013) reports finding similar patterns from NAEP secondary data analysis and includes analyses that suggest the SES gap is due not just to income but perhaps due more to early childhood learning opportunities.

What is perhaps enlightening, however, is as Harris and Herrington (2006) suggest, that "(t)he gap in achievement has shifted steadily from being an indicator of educational inequality to being a direct cause of socioeconomic inequality." They note that previous to the 1990s, the achievement gap was smaller:

> The rise of accountability policies during the early 1990s coincided with an increase in the achievement gap between white and minority students, reversing decades of steady improvement in outcome equity.

Is it just a coincidence that the achievement gap increased as a result of accountability policies? Harris and Herrington conducted an extensive review of policy reforms over the last 50 years, including content and time standards (more resources and instructional time), government-based accountability (e.g. rewards and punishments), and market-based accountability (e.g. charters and vouchers). Beginning in the 1950s, due to desegregation, the ESEA, and the major educational status report, *A Nation at Risk* (National Commission on Excellence in Education, 1983), minority students gained more access to resources, content, and rigorous curricula that previously were available only to white students. With the shift to more accountability of the 1990s, a major focus of the education system shifted away from students' learning and more onto the school and teachers' performance as a measure of accountability (Harris and Herrington, 2006).

Many are referring to inequitable opportunities as the *opportunity gap* (e.g. Carter, Welner, & Ladson-Billings, 2013). Students who lack critical resources, supports and the opportunities these provide, both in-school and out-of-school, suffer from a lack of opportunities which is considered by some as the primary cause of achievement gaps. Mitigating the issue from this standpoint alone would require a seismic shift in the general thinking of society and policymakers, resulting in a highly enlightened and humanitarian economic and social reversal of trends. It would be an admirable goal, but educators cannot wait for societal changes to happen at that level. However, there are things that localities can do on their own, which is for all sectors of society to become supportive and involved in schooling. A good example of this is the Harlem Children's Zone project which is further detailed in the *Promising Practices* section that follows.

Language Barriers

English Learners. Students who are learning English in addition to their native language(s) are conveniently labeled as *English Language Learners* (ELLs) or simply *English Learners* (ELs) in American educational system nomenclature. According to ED, ELs make up almost 10 percent of the student population nationwide (NCES, 2016).

Many of these students, as many as one in four, up to age six, in the U.S., come from families where at least one parent is an immigrant who does not speak English (Herbert, 2012). Many also simply come from areas within the U.S., especially in a diverse state like New Mexico, where their populations have persevered for hundreds of years and whose communities have been intent on preserving their cultural heritage and ethnic language or dialect, but who also remain enthusiastic about their children learning a second language.

The causes of achievement gaps among varying language groups exist when the students and the school system exist on separate planes, one speaking Language A and the other Language B. Delgado (2014) and Reardon and Galindo (2009), for example, found that even when controlling for SES, there remains clear associations between language proficiency and academic performance.

The Short List

There seems to be an endless list of what causes achievement gaps in general. However, if we are to accept the fact that social characteristics, like race and SES are not the cause, but are strongly correlated, then that leads to an understanding that *racism* and *class biases* (both systematic and ongoing personal and institutionalized biases) are the big underlying factors (Weissglass, 2001). These factors thus give way to more specific causes, such as the following inequities: school quality, school resources, families' social and cultural capital, economics, generational academic attainment, teacher expectations, academic standards in schools, and levels of community infrastructure (Miksic, 2014). Racism and class bias, even if distributed and implemented unwittingly, are two big factors that are able to unleash any number of residual causes of persistent gaps.

THE CAUSES OF ACHIEVEMENT GAPS WITHIN NEW MEXICO

We do not know of any major research study or even a credible opinion paper that states that there is no academic achievement gap within New Mexico or any other state.

At the same time, there is a paucity of high-quality empirical achievement-gap research conducted in New Mexico that can definitively state that our achievement gaps are due to one particular reason or another. For example, there is an understandable tendency to attribute low achievement to school funding and teacher shortages, but when considered in

isolation, New Mexico spent more in 2013 per pupil ($9,012) and had lower teacher-to-pupil ratios than the higher-achieving neighboring states of Arizona, Colorado, Oklahoma, Texas, and Utah (U.S. Census Bureau, 2015; Ballotpedia, 2016). These data are not presented to say that schools cannot make good use of more funds, they can, but to make note of the fact that systemic factors are also multivariate and no small combination of factors are the entirety of the problem. How money is spent is perhaps more important that the amount itself.

To try to narrow down the causes of achievement gaps for practical purposes, scientific and non-scientific research conducted within the state of New Mexico, such as the NAEP, suggests that the same causes that affect the nation as a whole may account for much of why the state education system is experiencing inequitable results in academic achievement.

The need for further research.   For this subsection, we wish to emphasize that there appears to be a lot of good research available on academic achievement strategies and programs in New Mexico, and it would take years to sum up and synthesize it all. However, we wish to emphasize the point again, that **improving achievement and reducing academic achievement gaps are not the same**.

At the same time, there is a paucity of high-quality research that specifically addresses the issue of closing the New Mexico educational achievement gap. For example,

- AS of November 2016, there were 3,494 citations in the ERIC digital library that have something to say about "New Mexico" (in quotes). These are mostly descriptive and research reports and about 20 percent are journal articles.   Most others are events-related handouts, evaluation reports, basic data, and opinion papers.

- When paired with "achievement gap" (in quotes), New Mexico's ERIC entries in the database dwindles to 31. Of those, only 12 are peer-reviewed. All of those, except for one, all are reports by the federal government, specifically NCES.

- The lone New Mexico entry submitted to ERIC is an article published in the Journal of School Counseling by David Olguin and Jeanmarie Keim (2009) that is elaborated below.

Within New Mexico, the issues regarding achievement gaps are mostly the same as the national scene, but the education system, from top to bottom, appears to have given up the good fight for closing the achievement gaps. No doubt, that is because laying out a coherent and practical process designed specifically to close identified gaps is tougher than the well-intentioned strategy of stimulating achievement for all students, which itself appears to simply sustain the status quo and do nothing about existing inequities.

PROMISING PRACTICES FOR REDUCING GAPS

In this section, we use the term *promising practices* because a term like "best practices" assumes we have carried out a robust comparison study of the many practices being promoted from endless agencies, organizations, institutions, and schools.

Sifting for Rigorous Research. One of the easier ways to narrow down one's exploration for more rigorous research in education, for example, on the benefits of bilingual education, might be to start with a keyword search on a Science.gov, an *interagency initiative of 19 U.S. government science organizations within 15 Federal Agencies* (including the US Departments of Education, Health and Human Services, and the National Science Foundation. Science.gov, or *ciencia.science.gov* in Spanish, also *provides a search of over 60 scientific databases and 200 million pages of science information with just one query, and is a gateway to over 2200 scientific Websites*.

However, we ask the reader to keep in mind that we are certainly aware that there are seemingly endless research and opinion papers on theories and strategies for instructional methods to raise academic achievement. Many of these ideas are promising for all students and, in many cases, specific population subgroups, and we encourage all educators to dig deep on what they need for their specific contexts, including by grades, subjects, population subgroups, and the individual characteristics of the students they serve.

And, the quest for rigorous research does not diminish the value, brilliance, or insight gained from the many opinion papers and analytical or alternative narratives that also cover these topics. But in many cases we are still awaiting more rigorous qualitative and/or quantitative research to further substantiate these ideas so that schools will have the confidence on where best to place their bets for improving education and for simultaneously narrowing their achievement gaps.

In this modest white paper, we seek to sift through the plethora and highlight some brief results from outside the state because they are interesting and potentially practical to New Mexico educators and policymakers, and also because they help to establish some fundamental principals about understanding and interpreting academic achievement gap research. We will then we look at some within-state research, specifically on achievement gaps facing Latino and Native American students, from which the plethora fades to a paucity.

The research base shrinks considerably because **raising academic achievement and narrowing gaps are not synonymous**. If we could put all of the good ideas for closing achievement gaps in general into a fishbowl, we would need a giant size fishbowl. Few would argue against most of the ideas we would find in there, and many would argue against even thinking about removing some of the practices and strategies currently in existence. But even though good ideas and good strategies may help to raise achievement, in themselves, they rarely close or narrow achievement gaps.

Most of the achievement gap research is overwhelmingly descriptive in nature, usually displaying graphs that illustrate proficiency levels for various subgroups followed by some guidance and good ideas for raising achievement of the lower-performing groups. Very few, however, are prescriptive and can say definitively — with long-term, tried and true, replicable empirical proof — that if we do A (a short list of strategies), then B (a clear closing or narrowing of the gaps) will happen.

FINDING AND SIFTING THROUGH PROMISING PRACTICES

As the national education system was eager to know more about status of inequity in education, and the causes of the achievement gaps, there is also legislation designed to help us sort through the process of finding solutions.

Emerging just after NCLB became law, the Education Sciences Reform Act of 2002 (ESRA, 2002) went into effect. The purpose of ESRA was to create the Institute of Education Sciences (IES), a presumably independent and non-partisan statistics, research, and evaluation wing at ED. ESRA also included provisions for the Institute of Education Sciences at NCES and NAEP (from where we get most of our national achievement gap statistics for this paper), the continuation of the Education Resources Information Center (ERIC), and the What Works Clearinghouse (WWC). The purpose of the act was to provide scientific evidence to inform educational research, policy, and practice.

ERIC is the major resource for identifying research for this white paper for two reasons: 1) it is an online digital library of about 1.5 million educational research publications, many with full text and immediately-available public access, 2) much and possibly all of what is fundamentally important about best practices in closing achievement gaps can be found at ERIC at no cost.

ERIC is described by Wikipedia (2016) as follows:

> *The mission of ERIC is to provide a comprehensive, easy-to-use, searchable, Internet-based bibliographic and full-text database of education research and information for educators, researchers, and the general public. Education research and information are essential to improving teaching, learning, and educational decision-making.*

The WWC quickly became a major educational research review initiative to assess the quality of educational research in various content areas. It not only would assess research findings and results, but it would also assess the quality of the research itself, thereby disqualifying much research as inadequate or insufficiently verifiable to be taken too seriously by policymakers, administrators, educators, and all other stakeholders.

The WWC has also stirred much controversy over whether it considers only experimental design research to be "the gold standard" over other research methods. The reason it is important to note here is that there is no shortage of educational interventions "based on research" that are proposed to school systems. When many of those interventions are assessed by WWC, however, they often fall flat as having "no discernible effects" or even in some cases as being "potentially detrimental."

NATIONAL STRATEGIES

For some, desegregation or integration efforts offer the greatest opportunities for education systems nationwide. As stated by researchers at The Century Foundation (Potter, Quick, and Davies, 2016):

> *Students in racially and socioeconomically integrated schools experience academic, cognitive, and social benefits that are not available to students in racially isolated, high-poverty environments. A large body of research going back five decades underscores the improved experiences that integrated schools provide.*

These same researchers also reference other research, including a review of 59 "rigorous studies" that point out that integrated schools demonstrate improved outcomes overall in math, and other research that shows that racially diverse schools promote critical

thinking skills, reduced prejudice, and an array of civic benefits (like integrated neighborhoods) that segregated schools do not provide.

They also emphasize this point: "As of October 2016, TCF has identified a total of one hundred districts and charter networks across the country that now use socioeconomic status as a factor in student assignment."

NEW MEXICO'S STRATEGIC HISTORY

New Mexico is fortunate to have a rich and unique history of human perseverance and cultural heritage and diversity. With this also came a series of unfortunate clashes of civilizations. The time it takes to work out the difficulties and inequities of historical struggles has not concluded, and to this day we see these struggles continue in many aspects of society, including education.

New Mexico is a state, however, that has chosen to honor and cherish its cultural diversity, and this mindset is often reflected in pronouncements, strategies, and initiatives coming from policymakers and educators alike.

In 2010, New Mexico enacted the Hispanic Education Act (Section 22-23B-6 NMSA 1978), legislation specifically designed to close the academic achievement gap facing Hispanics. The act provides, without specific appropriations, for a Hispanic Education Liaison, a Hispanic Education Advisory Council, and a Hispanic Statewide Status Report (NMPED, 2013, 2015b; NCLS, 2016).

New Mexico is also, as PED states, the "only state to be implementing a comprehensive Indian Education Act." The Indian Education Act [22-23A-1 to 22-23A-8 et seq. NMSA 1978] together with the Implementing the Indian Education Act [6.35.2.6 NMAC - N, 07-30-15] (NMPED, 2015c) includes many purposes and provisions for improving the education of Native American students. Some of the purposes most relevant to closing the educational achievement gap for Native American students are stated as follows:

- *ensure equitable and culturally relevant learning environments, educational opportunities and culturally relevant instructional materials for American Indian students enrolled in public schools*;

- *ensure maintenance of native languages*;

- *provide for the study, development and implementation of educational systems that positively affect the educational success of American Indian students*;

- *ensure that parents, tribal departments of education, community-based organizations, the department, universities, and tribal, state and local policymakers work together to find ways to improve educational opportunities for American Indian students*;

- *ensure that tribes are notified of all curricula development for their approval and support;* and,

- *encourage and foster parental involvement in the education of Indian students.*

Additionally, in 2015 the state legislature and governor officially coded into law the Bilingualism-Biliteracy State Seal statute and rule [6.32.3.3 NMAC - N, 09-15-15] (NMPED, 2015a, 2016b). As stated on page 8 in the *Guidance Handbook*:

The Seal of Bilingualism/Biliteracy is an award given by a school or district in recognition of students who have studied and, by high school graduation, attained proficiency in a language other than English. The Seal of Bilingualism/Biliteracy emblem appears on the diploma of the graduating senior (including a notation on

the student's transcript) and encourages students to pursue biliteracy, honors the skills students attain, and can be evidence of skills that are attractive to future employers and college admissions offices...

Like all K-12 statewide education systems, New Mexico schools have also tried a plethora of commonly acceptable gap reduction strategies in recent years. These include:

- aligning to content and performance standards and assessments,
- being more responsive to students cultural and linguistic assets and needs,
- focusing more attention of lower-achieving students and subgroups,
- focusing on teacher growth,
- implementing accountability systems,
- increasing access to and application of technology,
- increasing parent involvement,
- promoting new environmental/social climate and leadership strategies,
- promoting new instructional and pedagogical methods,
- providing increased technical assistance to low-performing schools,
- seeking outside assistance and technical support, and
- using data for improvement.

PED has itself acknowledged achievement gaps for low-income and ethnic minority students, and has frequently reiterated in its annual reports its own commitment to making progress in (NMPED, 2006, 2010).

Few would argue with the overall framework and details of PED's strategic plans and initiatives as being good for the state. For example, in 2010 it articulated an educational reform plan that included increased focus and effort on: "(1) Academic Rigor and Accountability; (2) Closing the Achievement Gap; (3) School Readiness; (4) Quality Teachers; (5) Parent & Community Involvement; (6) 21st Century Classrooms; and (7) College & Workforce Readiness."

It has also initiated a variety of strategies designed to narrow these achievement gaps. These include:

- Ratcheting up public Pre-K programs to bring early learning opportunities through 664 licensed providers statewide to more than 1,500 children;
- Implementing nutrition initiatives and statewide elementary breakfast programs, and being recognized by the Food and Research Action Center in 2007 as having the highest percentage of eligible students eating free and reduced-price breakfast (NMPED, 2010a).
- Increasing the number of school-based health centers to 56 statewide and implementing physical education and anti-obesity initiatives.

Like all SEAs, many of the state's "strategies" for closing achievement gaps are also expressed as outcomes. For example: "Ensure that all children are ready for kindergarten" or "Increase proficiency in English for English Language Learners."

And, like most if not all SEAs, New Mexico has tried and implemented a long list of performance and achievement measures as both data analysis strategies and accountability mechanisms.

Additionally, there are several formal and informal collaborations addressing the New Mexico academic achievement gap. These include the New Mexico Achievement Gap Research Alliance, an outgrowth of SEDL (formerly known as the Southwest Educational Development Laboratory) that forms a network of education leaders known as Core Alliance Members to address achievement gaps and share resources (SEDL, 2016).

PROMISING PRACTICES

Most educators, administrators, researchers, and policymakers would probably agree with much that is included in this paper so far, but also that we need to know what we can do that gives us the best opportunity for success for closing achievement gaps. We can only suggest that we try to find research, or even invent the process from scratch if necessary, to carry out what we are calling *the capable steps*.

We know what we want to know: iCare, or *the capable steps*. Seek out research or a process that includes the following...

1. *intentional (if we do A then B will happen),*

2. *concrete (do it like this),*

3. *affordable (can be implemented and completed on time),*

4. *replicable (we can do it again and again), and*

5. *empirically-verifiable (we can measure the successful outcomes)*

action steps (hereinafter referred to as iCare, or *the capable steps*).

Before we list some of the other *promising practices* for closing achievement gaps in education, we wish to provide a non-example to make a point.

Developmental Bridge Programs. Everyone knows that post-secondary summer bridge programs — that is, extra-curricular but intensely academic and accelerated programs designed to help students prepare for college — are generally a good thing. The WWC, however, reviewed a number of developmental summer bridge programs and found that they "have no discernible effects on academic achievement, postsecondary enrollment, and credit accumulation for postsecondary students" (What Works Clearinghouse, 2015).

At the same time, we know that developmental bridge programs may be beneficial in many ways, they may just not be the best option given all considerations or required outcomes, such as academic achievement. For example, Olguin and Keim (2009) conducted a limited qualitative study, using surveys and site audits, to assess a post-secondary career transition plan, *The New Mexico Next Step Plan* (NSP), and to help explain why stakeholder relationships may be important to help close achievement gaps for ethnic youth. Based on participant feedback, they report how the study garnered insights into "how the school counseling curriculum can utilize stakeholders in career development activities to promote students' academic success" (Olguin & Keim, 2009). Their article was published in the *Journal of School Counseling* and is the only New Mexico entry on achievement gaps that is peer-reviewed and appears (with 'New Mexico' and 'achievement gap' in quotes) in the ERIC database.

What these studies tell us is that we can get useful knowledge and results from well-designed interventions; however, as with the studies the WWC reviewed, we do not always get the *intentional* results, like academic achievement or gap reduction, that we hope for.

Improving Achievement of Students of Color

According to Delgado (2014),

Before achievement gaps can truly be addressed, it will be important for researchers to better understand the importance of achievement in early childhood, over time and how that varies by ethnicity, gender, SES and ELL status.

Charter Schools and Students from Low-Income Neighborhoods. The Promise Academy charter school, associated with the Harlem Children's Zone (HCZ) in New York City's Harlem district, has garnered a lot of attention and excitement in recent years. HCZ "combines reform-minded charter schools with a web of community services designed to provide a positive and supportive social environment outside of school." Because of limited enrollment capacity, the school implemented a randomized lottery system for admission into the school, which in effect set up an experimental group (*admitted students*) and a comparison group (*students not admitted*). A study of student outcomes, using standardized statewide math and English language arts (ELA) tests, clearly show that admitted students scored *significantly* better in sixth, seventh, and eighth grade math, as well as eighth grade ELA (Dobbie & Fryer, 2009). The WWC reviewed the study and stated that the "research described in this report is consistent with WWC evidence standards."

However, just to make a point about complexity in achievement gap research, further research seemed to undermine those claims. The HCZ, the non-profit organization that directly supports the Promise Academy, quickly gained national attention, including a feature on the CBS 60 Minutes program as well as accolades from President Obama as a strategy to combat urban poverty.   As a result, the former Assistant Secretary of ED and the first and former IES Director, Grover Whitehurst, having then taken a position with the conservative Brookings Institution, led a new study of HCZ-supported schools to see how they compared academically with other charter schools. What was no doubt disappointing to many, his study found that "achievement by students in HCZ schools is unexceptional relative to other charter schools" (Whitehurst & Croft, 2010).

Regardless of the results found by the Brooking Institution, the momentum of the HCZ experience has already spread and there is now a federal grant program, "Promise Neighborhoods," that is based on the HCZ model of schools and community services working together to "improve the educational and developmental outcomes of children and youth in our most distressed communities, and to transform those communities" (ED, 2016b).

What the Whitehurst and Croft study did not take into account, however, is what the Harlem neighborhood schools were like before HCZ, and what they might be like today if they did not have HCZ support, and that the "Promise Neighborhoods" model is more holistic, long-term, and future-oriented. Egalite (2016) puts it this way:

HCZ is a 'pipeline' model that aims to transform an entire community by targeting services across many different domains. Therefore, we may have to wait until a cohort of students has progressed through that pipeline before we can get a full picture of how these comprehensive services have benefited them. The first cohort to complete the entire HCZ program is expected to graduate from high school in 2020.

Hispanic/Latino Students

We find that there are no robust studies, at least that we know of, that provide *the capable steps* to go about closing the academic achievement gap between Hispanic students and other ethnic groups, particularly in New Mexico. We would be thrilled to be able to say that the solutions are easy and that the good fight is over.

Instead, educators often find themselves at the same crossroads every year: to go right or left, and settle on strategies designed to improve the achievement of all students, hoping that will close the gap; or go the other way and implement compensatory strategies designed to offer lower-performing students more separate time, attention, and resources.

The American Federation of Teachers (AFT, 2004), an advocate for its affiliates, made up of public schools, teachers, and institutions of higher education, takes a more systemic approach. AFT developed a list of recommendation for itself, on what it can do to provide leadership for improving educational outcomes for Latino students. These include:

1. Promote access to more academically rigorous coursework for Latino students.
2. Call for the strengthening of dropout prevention programs.
3. Promote research-based information on effective instruction for linguistically and culturally diverse students.
4. Advocate for stronger professional development programs for teachers on effective instruction for English language learners.
5. Continue to support federal and state legislation that allows undocumented students to seek a change in their citizenship status so that they can attend college and seek employment.
6. Continue to help resource-poor schools improve and promote strategies that work, including early childhood education programs.
7. Promote adult education and parent involvement programs.

Miksic (2014) advocates for school- and community-wide reforms that include:

- Smaller class sizes,
- Increasing access to charter and religious schools,
- Increasing academic rigor,
- Government support systems such as Head Start,
- Community inclusion programs such as the Harlem Children's Zone, and
- Programs that build academic identity and social capital for underachieving youths.

Native American Students

As with Hispanic students in New Mexico, we find that there are no robust studies that provide for *the capable steps* to go about closing the gap between Native American students and other ethnic groups. There are, however, numerous good quality studies, analytical essays, and opinion papers about raising the academic achievement of Native Americans, and one could extrapolate the principles and methods for implementing gap reduction strategies. A couple of key resources on this topic include the following:

Mid-continent Research for Education and Learning (McREL, 2003) reviewed the effectiveness of 16 studies of programs designed to raise Native American student achievement in English language arts and mathematics to meet designated standards. Their

findings were mixed with some programs meeting grade-level expectations, but overall they could not find a causal link sufficient to recommend that schools adopt these programs. At the same time, they found that the more successful programs did have common characteristics, that McREL suggests are promising practices. These include: 1) to teach indigenous language and literacy before learning to read and write in English, 2) to focus on reading comprehension, collaborative learning, and regular monitoring as students progress, and 3) to use culturally relevant instructional materials, including for mathematics.

Christopher Lohse (2008), lead researcher for the National Caucus of Native American State Legislators, conducted research and in-depth analysis of the achievement gap facing Native Americans in K-12 schools. His report includes detailed analyses of the educational status of Native Americans, including the achievement gaps of Native Americans compared with other ethnicities. He pairs the analyses with a systematic extraction of principles and educational and policy recommendations for improving the education of Native peoples. His policy recommendations include systemic improvements in the categorical areas of 1) staffing patterns, 2) course offerings, and 3) parental, family, and community support.

The Obama Administration has also weighed in on the subject with the Generation Indigenous or "Gen I" initiative that supports community projects and a national network for native youth (ICMN Staff, 2015). ED also announced in Fall 2016 "new resources aimed at closing the achievement gap so that all native students—whether in tribal or traditional public schools—have the opportunity to succeed" (ED, 2016a). These include a new round of educational grant opportunities as well as a Navajo Nation Agreement that allows Bureau of Indian Education (BIE) funded schools in New Mexico, Arizona, and Utah to take greater control of how they implement federal-funding requirements, such as standards and assessments.

There are also living, breathing social and community laboratories where Native American educators and supporters are taking matters into their own hands in a pursuit to use education to empower native communities. These include the Native American Community Academy (NACA), a grades 6-12 secondary charter school founded in 2006 "designed to serve the academic, cultural, and wellness needs of Native American youth" (Krause, 2013). About 95 percent of NACA students are Native American, representing 50 tribes, which includes the 22 native tribes within New Mexico as well as others whose families migrated here in recent and distant years past.

NACA's "core values," designed to improve students' academic achievement, include traditional Native American values such as respect, responsibility, community/service, culture, perseverance, and reflection (Krause, 2013). Some may, as do the founders of NACA, insist that these values are important for the holistic wellness of their students, and are therefore prerequisites for long-term academic achievement. According to Krause:

> *After six years, students of all ages clearly articulate how different school is for them; how they feel a sense of pride when they freely express their identity; how they have learned to respect all other cultures; and most important of all, how they see a future built on a college education. Students express gratitude for being in an education setting that connects their individual background and culture to their academics. They see where they fit in--an essential variable for teenagers.*

Improving the Education of English Learners

The academic achievement gaps between ELs and non-ELs is persistent and remains about the same size as the gap between white and black children (NCES, 2011). There is

considerable research, however, showing that certain bilingual models or programs are more effective than others under certain conditions and other factors, including progress, years in a program, and grade. Valentino and Reardon (2015), for example, reviewed research on various bilingual models, focusing largely on Latino and Chinese students. In their summary statements, they suggest that "for Latino students in particular, two-language programs lead to better academic outcomes than English immersion programs in the long-term." For the selected program to be a gap equalizer, however, would require more information about whether it is able to narrow the gaps between ELs and non-ELs.

ELs and Early Childhood Education. Because ELs by definition are not fully fluent in English when they first enter a school and therefore enter at a disadvantage, in many cases, the gap between them and their English-fluent peers widens over the school year and continues grade-by-grade. A solution often recommended as a remedy to inequitable starting points is early childhood development and preparation, or preschool (Herbert, 2012). This is true for both learning languages and learning content.

Bodovski and Farkas (2007) found, for example, that students with higher initial skills and readiness in mathematics show greater mathematics growth rates from kindergarten to grade 3 over cohorts with lower skills. Therefore, if the mathematics gap is to be reduced, the starting point must be equalized and schools must act to prepare students of lower skills in advance.

A strong case for dual-language education. Many scholars in the field of bilingual/multicultural education in New Mexico are very familiar with the work of Virginia Thomas and Wayne Collier, long time researchers and evaluators in the field. For more than 30 years, Thomas and Collier have been collecting and tracking outcomes data on hundreds of thousands (now totaling millions) of EL students. Their many years of published findings, routinely corroborated by other researchers, are summed up in their latest books *Dual Language Education For A Transformed World* (2012) and *Creating Dual Language Schools for a Transformed World: Administrators Speak* (2014).

The essence of the work of Thomas and Collier tells us in the language of educational research what many experts, including teachers, in the field have been saying all along: that it is important to educate language minority children in the language in which they currently speak, and think, and dream. Additionally, there is substantial research that demonstrates the increased, and often amazing, personal and societal benefits of children learning academic content in more than one language, particularly in in well-structured environments. And, there are strong claims that dual language learning can reverse the achievement gap, not only for ELs, but also for other historically low-performing groups, such as African Americans, and students from families of low SES (Groom & Hanson, 2013).

A quick warning: the list is so long that a simple browser search would turn up at least hundreds of thousands if not millions of web pages elaborating on this point.

But implementing dual-language education can be more complicated than it appears. Schools need well-trained bilingual educators, stakeholder and administrative buy-in, and high-quality instructional materials and assessments just to get started. As there is no one-size-fits-all approach in education, and there is so much research in so many related areas, teachers are reminded to first try to narrow their search for what's practical for them by state, region, grade, subject, and student populations.

Instructional Methods

There is a seemingly endless list of instructional methods or practices of teaching, some referred to as pedagogies, that have large followings, fans, and devotees among teachers

and scholars. These include, for example, active or experiential learning, personalization or child-centered education, authentic or situated learning (instruction in practical contexts), culturally and linguistically responsive instruction (focusing on the child's language and culture), constructivist education (giving students the opportunity to construct new or personalized meaning), service learning (adding social meaning to the learning context), mastery learning, and many more. All of the above usually include some practices or strategies that address the emotional, psychosocial, and/or behavior needs of students as well. Most colleges of education ensure that their graduates have at least some exposure to a large repertoire of these to include in their teaching-learning toolbox.

So why are achievement gaps in education more often than not remaining stagnant or even widening as time progresses? One might argue that it is because even though schools are often focusing on implementing recommended teaching practices, most schools rarely take actions that focus specifically on closing achievement gaps directly, such as ensuring that students are prepared and tracked into more successful pathways. For example, the NAEP 2009 High School Transcript Study found that only small percentages of black, Hispanic, and EL students, compared to white and Asian students, had participated in a "rigorous curriculum" (NCES, 2009). Unfair tracking, lack of preparation, not creating pathways, and segregation, even unintentionally, are likely to widen achievement and opportunity gaps rather them reverse them. It is presently not known to what extent most public universities throughout the United States, New Mexico included, are actually preparing teachers and administrators to conduct achievement gap needs assessments, analysis, and strategic planning.

Below are some instructional methods that may serve as good examples of the complexities and possibilities of implementing gap reduction strategies in the classroom.

Dialogic Reading. The aforementioned Grover Whitehurst is also known as the key developer of an early childhood (toddlers and Pre-K) reading practice that can be conducted by staff and volunteers in public libraries, or even at home. It is described as follows:

> "Dialogic Reading" is an interactive shared picture book reading practice designed to enhance young children's language and literacy skills. During the shared reading practice, the adult and the child switch roles so that the child learns to become the storyteller with the assistance of the adult, who functions as an active listener and questioner (What Works Clearinghouse, 2006).

A quick search of "Dialogic Reading" (in quotes) in the ERIC digital library returns 94 citations, 77 of which are peer-reviewed studies. That is because the reading practice was experiencing some documented success since the 1990s. A more recent review by the WWC (2006) of six studies involving the practice found it to have "positive effects for oral language, potentially positive effects for print knowledge, no discernible effects for phonological processing, and potentially positive effects for early reading/writing." It follows, therefore, that many other academics and other researchers have either tried to replicate some of the strategy's purported success, or to test it in variations with other population subgroups and different environments. Today, *Dialogic Reading* as a practice is free to the public and does not come from a single proprietary materials developer or vendor. For it to be adopted by a teacher, PLC, school, district, or even the state, it would make sense for the end-users to further refine their search in order assess the value of this strategy for a specific context.

Personalized writing. In a well-designed study that met with the approval of the WWC, Cohen et al. (2009) tried a novel strategy that they anticipated would improve the academic achievement of middle-school African-American students and reduce the gap with

white students. The study had African-American students write essays about their personal values (i.e. people and experiences personally important to themselves), while white students, the comparison group, wrote about neutral subjects. The result was that the experimental group gained ground and narrowed the gap on their grade point averages in math, science, social studies, and English.

No doubt many of our teachers would question whether it is fair and makes sense to give one population an instructional strategy that we know has promise, and to withhold it from another population. The follow-up question, that we would have to ask ourselves, may be whether providing this strategy for all student populations empowers those who are persistently less engaged in school, possibly due to lack of cultural relevance, to gain some ground and reduce the gap.   The answer would have to come from in-school measurement and evaluation, and possibly at the grade, subject, and classroom levels.

In-School Action Research

The issue of what educators on the ground can do to effect positive results in student achievement is an open question, which is compounded by the need to focus on closing the achievement gap.

Phyllis S. Martinez (2013), a doctoral graduate of UNM, conducted a phenomenological study where she investigated the experience and perspectives of persons involved in the practices of bilingual education. She conducted small group and individual interviews with both recent immigrant and native New Mexico Hispanic high school students (N=16) and their parents (N=4) as well as current and recent school staff personnel (N=9).   Although her findings are many, she includes this interpretation of results:

> This research uses the words of students, teachers, and parents to begin that process. Findings from data collected through interviews with insider perspectives, has produced concepts and themes that connect to the research questions, seeking answers about the effectiveness of bilingual education. Concepts and themes were specific to the question: What do participants identify as what worked and what did not work; what was helpful to their learning and what was not; all for the process of language acquisition, academic achievement, and overall student success. Their observations offer understanding and insights in relation to currently implemented bilingual education programs.

Gathering and interpreting the perspectives of local participants, Martinez found many surprises. For example, students informed her that the "biggest obstacle in language instruction according to most students in this study, (was) the small amount of time spent in classrooms where students were required to speak the language." She also found that perspectives of the two Hispanic groups, recent immigrant and long-term native New Mexicans were different at the school she studied.   She sums up that particular finding this way: "The days of a 'one size fits all' program that can address the needs of all students, is over." Although this study's methods and findings are not necessarily generalizable to all bilingual schools, it is indicative of how useful and straightforward it is to explore the perspectives of the people in one's own environment and not simply to look past our selves and exclusively toward the guidance from above. We should possibly do both, depending on relevance and the particulars.

For educators on-site to move toward becoming the experts of student achievement and narrowing gaps in their schools and classrooms, they need to at least conduct a traditional *analysis, design, development, implementation, and evaluation* (ADDIE) process (Morrison,

2010). What is often given inadequate attention in the ADDIE process are the two most important phases: *development* and *implementation* of activities. We must be careful, however, not to let *analysis*, where we often get into the weeds, to overcome the process; we need to rapidly *implement* the work. Instructional designers often refer to this as *rapid prototyping* (start doing the work or developing the products and refine and adjust as one goes along).

> In and out of school research it is not an either-or proposition. In-school action research and external research and guidance need to work together. Practitioners should not get bogged down with the tedious and often time-consuming task of reviewing, simplifying, and synthesizing research on esoteric topics because in most cases that is the responsibility of someone, paid by our tax dollars, to have already done it for us. Practitioners can simply review, deconstruct, and/or adapt the higher-level syntheses and guidance that summarizes what is known. The bulk of their time might be better spent in the real-life laboratory that awaits them.

Some variations of ADDIE include PADDIE+M, where P stands for *planning* and M stands for *maintenance*. According to Wikipedia (see ADDIE), the PADDIE+M "model is gaining acceptance in the United States government as a more complete model of ADDIE." Old school instructional designers would probably argue that *planning* is part of *design*, and *maintenance* or *sustainability* is simply sustaining the process if it works.

Needs Assessments. There is an abundance of guidance available for each phase of ADDIE, but a critical one for closing achievement gaps is *analysis*, or more appropriately in education, conducting a *needs assessment*.   Rossett (1987), for example, sees the needs assessment process as an inquiry into the gap between *actuals* and *optimals*, where *actuals* represent the current status, such as the size of an achievement gap, and *optimals* represents the desired status, which can be no gap at all, or over time a target reduction in the gap, like a narrowing of 10 points each year. This would solve a much needed re-focus on how we most often address achievement gaps, because we would be focused on the gap itself, and not just on raising achievement of all students, which, even if successful, would in most cases mean that the gap remains, just at a higher level. A perpetual cycle of inequity.

A quick search of "needs assessments" (in quotes) on ERIC yields 18,4776 citations. Paired with "achievement gap" (also in quotes) it yields 29 citations. If a school wishes to conduct a needs assessment of its achievement gaps, it does not make sense that all persons assisting in the task read all of these citations or have the same knowledge and expertise. Rather, bilingual teachers could choose to focus on the citation *Dual Language Learners in the Early Years: Getting Ready to Succeed in School* (Ballantyne, Sanderman, and McLaughlin, 2008), distributed by the National Clearinghouse for English Language Acquisition (NCELA). This publication lays out a great many gaps and needs facing dual-language learners and may simplify at least part of the ADDIE process for serving this population subgroup.

There are many free, online accessible research summaries available for all content areas and issues and they may all be good primers for getting started. However, we are also aware that external research, guidance, and requirements alone have not narrowed the achievement gaps to optimal or even acceptable levels. Acknowledging that fact can open the door to see if experts in the schools themselves can find their own solutions. The most promising strategy may be *action research*, which usually follows some semblance of the ADDIE method, and is defined in Wikipedia as follows:

Action research is either research initiated to solve an immediate problem or a reflective process of progressive problem solving led by individuals working with others in teams or as part of a "community of practice" to improve the way they address issues and solve problems.

Imagine that. Practitioners engaged in the tasks and developing the expertise to be an integral authority in their own personal growth, as well as collaborating with colleagues in the *analysis, design, development, implementation, and evaluation* of on-site achievement gap solutions.

These final two bits of advice pertain to *rapid prototyping* and *layers of necessity*.

- Bit one is rapid prototyping: get started on the solution now, even though the analysis phase is still in existence. Start all of the ADDIE processes simultaneously if it seems practical and worthwhile. For example, start using your new mathematics strategy and let the experience inform your analysis and development phases as well.

- Bit two is to implement your ADDIE in practical ways. For example, Tessmer and Wedman (1990) developed the *Layers of Necessity Model* as a way to streamline the instructional design and development process. The principles of the model, however, are transferrable to the present context of conducting an ADDIE to narrow achievement gaps. These include doing what is practical and necessary and not doing what is unnecessary or unrealistically complex or meticulous. Overcomplicating can be counter-productive. In the present context, avoid getting caught up in a full-blown needs assessment if it takes too much time away from the teaching and learning process. Scale down each of the ADDIE phases to what is practical and necessary to address the issue, and consider using external consultants or facilitators to help move things along as quickly as possible.

SUMMARY

Because of the multivariate nature of the causes of achievement gaps in education, we are finding that that there is no one-size-fits-all approach that we can all agree on that would solve the equity issues across our many districts and schools.

The Educational Opportunity Monitoring Project at Stanford University, for example, focuses on two dimensions of educational equity: 1) patterns of educational opportunity and 2) experiences and patterns of educational progress and outcomes (CEPA, 2016). These include:

1. **Key features of educational opportunity and experiences**: e.g. skilled teachers, high quality educational environments, and challenging curricula.

2. **Key indicators of educational progress and outcomes**: e.g. exposure or access to early childhood development, supports for social, emotional, and behavioral development, and as well as graduation rates and paying particular attention to these outcomes related to race/ethnicity, family SES, and gender.

To complicate matters, researchers are making the point that closing the achievement gap is not an end to itself and many schools that narrow their gaps are not necessarily high performing or even making Adequate Yearly Progress (Ratcliff, Costner, Carroll, Jones, Sheehan, & Hunt, 2016; Anderson, Medrich, & Fowler, 2007).

The sum of this analysis suggests that the solutions we seek for closing achievement gaps and raising educational achievement in New Mexico will not necessarily be found externally, at least not exclusively. Therefore, we must consider looking internally to increase relevant training and supports for the stream of future leaders and potential experts we place into education, including IHE teacher preparation faculty, administrative staff at the school and district levels, and especially well-trained teachers and specialists. In order for all of us to be effective in our respective roles for closing achievement gaps, and thereby improving the academic performance of all children, especially those struggling to catch up, we need to be active researchers, analysts, strategists, and evaluators (i,e. *experts*) in our specific context, which includes the classroom level.

REFERENCES

AFT (2004). Closing the Achievement Gap: Focus on Latino Students, *Policy Brief, 17*, March, American Federation of Teachers: Washington DC. Retrieved from http://files.eric.ed.gov/fulltext/ED497878.pdf

Anderson, S., Medrich, E. & Fowler, D. (2007). Which Achievement Gap?, *Phi Delta Kappan, 88, 07*, pp. 547-550. Retrieved from http://www.rti.org/sites/default/files/resources/k0703and.pdf

Ballantyne, K.G., Sanderman, A.R. & McLaughlin, N. (2008). *Dual language learners in the early years: Getting ready to succeed in school.* Washington, DC: National Clearinghouse for English Language Acquisition. Retrieved from http://files.eric.ed.gov/fulltext/ED512635.pdf

Ballotpedia (2016). *Ballotpedia: The Encyclopedia of American Politics.* Retrieved from https://ballotpedia.org/Public_education_in_New_Mexico

Berliner, D. C. (2012). Effects of inequality and poverty vs. teachers and schooling on America's youth. *Teachers College Record*, *116*, *1*. Retrieved from https://pdfs.semanticscholar.org/9d17/9d15b47fca610e903bcef00f42141629aa6a.pdf

Bernhardt,V. L. (1998, March). *Multiple Measures. Invited Monograph No. 4.*, California Association for Supervision and Curriculum Development (CASCD). Retrieved from http://eff.csuchico.edu/downloads/MMeasure.pdf

Bodovski, K. & Farkas, G. (2007). Mathematics growth in early elementary school: The roles of beginning knowledge, student engagement, and instruction. *The Elementary School Journal, 108, 2*, pp. 115-130.   Retrieved online at https://www.researchgate.net/publication/232492867_Mathematics_Growth_in_Early_Elementary_School_The_Roles_of_Beginning_Knowledge_Student_Engagement_and_Instruction

Carter, P. L., Welner, K. G., & Ladson-Billings, G. (2013). *Closing the opportunity gap: What America must do to give every child an even chance*. Oxford ; New York.

CEP (2009a). *Are Achievement Gaps Closing and Is Achievement Rising for All?* Center on Education Policy: Washington DC. Retrieved from http://files.eric.ed.gov/fulltext/ED507909.pdf

CEP (2009b). *Subgroup Achievement and Gap Trends: New Mexico*. Education Policy: Washington DC. Retrieved from http://files.eric.ed.gov/fulltext/ED507961.pdf

CEPA (2016). *The Educational Opportunity Monitoring Project*, Center for Education Policy Analysis, Stanford University. Retrieved from http://cepa.stanford.edu/educational-opportunity-monitoring-project/overview

Civil Rights Act of 1964, Pub.L. 88-352, 78 Stat. 241 (1964).

Cohen, G. L., Garcia, J., Purdie-Vaughns, V., Apfel, N., & Brzustoski, P. (2009). Recursive processes in self-affirmation: Intervening to close the minority achievement gap. *Science, 324, 5925*, 400–403.

Coleman, J. S., Campbell, E. Q., Hobson, et al. (1966). *Equality of educational opportunity.* Washington, DC: U.S. Government Printing Office. Retrieved from http://files.eric.ed.gov/fulltext/ED012275.pdf

Collier, V. P., Thomas, W. P. (2014). *Creating Dual Language Schools for a Transformed World: Administrators Speak*. Albuquerque, NM: Dual Language Education of New Mexico – Fuente Press.

Delgado-Riley, R. (2014). <u>*Mirando Hacia el Futuro*</u>: *Using Multilevel Growth Models to Examine the Achievement Gap Between White and Hispanic Students*. Unpublished manuscript (doctoral dissertation).

Demmert, W. G., Grissmer, D. & Towner, J. (2006). A Review and Analysis of the Research on Native American Students. *Journal of American Indian Education, 45, 3*. Retrieved from https://jaie.asu.edu/sites/default/files/453_2006_2_demmert_et_al.pdf

Dobbie, W., & Fryer, R. G., Jr., (2009). *Are high-quality schools enough to close the achievement gap? Evidence from a social experiment in Harlem*. (NBER Working Paper No. 15473). Cambridge, MA: National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w15473.pdf

ED (2016a). *Obama Administration Announces New Resources to Help Ensure Opportunity for Native Students*. U.S. Department Of Education. http://www.ed.gov/news/press-releases/obama-administration-announces-new-resources-help-ensure-opportunity-native-students

ED (2016b). *Promise Neighborhoods* (Grant Program). Office of Innovation and Improvement. U.S. Department Of Education. Retrieved from http://www2.ed.gov/programs/promiseneighborhoods/index.html

Education Week (2015). The Every Student Succeeds Act: Explained, *Education Week, 35, 14*, pp. 17. Retrieved from http://www.edweek.org/ew/articles/2015/12/07/the-every-student-succeeds-act-explained.html

Egalite, A. J. (2016). How Family Background Influences Student Achievement: Can Schools Narrow the Gap? *Education Next*. Retrieved from http://educationnext.org/how-family-background-influences-student-achievement/

ESEA (1965). *Elementary and Secondary Education Act of 1965*, 20 U.S.C. 6301 et seq. Retrieved from https://www.gpo.gov/fdsys/pkg/STATUTE-79/pdf/STATUTE-79-Pg27.pdf

ESRA (2002). Education Sciences Reform. Act of 2002. Retrieved from
    https://www.congress.gov/congressional-report/107th-congress/senate-report/337

ESSA (2015). *Every Student Succeeds Act of 2015*, Pub. L. No. 114-95 § 114 Stat. 1177.
    Retrieved from https://www.gpo.gov/fdsys/pkg/BILLS-114s1177enr/html/BILLS-
    114s1177enr.htm

Groom, D., & Hanson, R. (2013). *Dual language education can close achievement gap*.
    Washington, DC: Joint National Committee for Languages-National Council for
    Languages and International Studies. Retrieved from
    http://www.thomasandcollier.com/assets/jncl-nclis-white-paper-on-dual-language-
    education.pdf

Hanushek, E. A. (2016). What Matters for Student Achievement: Updating Coleman on the
    Influence of Families and Schools, *Education Next, 16, 2*. Retrieved from
    http://educationnext.org/what-matters-for-student-achievement/

Harris, D. N., & Herrington, C.D. (2006). Accountability, standards, and the growing
    achievement gap: Lessons from the past half-century. *American Journal of Education*,
    112(2), 209-238. Retrieved from
    http://www.journals.uchicago.edu/doi/10.1086/498995

Hemphill, F. C., and Vanneman, A. (2011). *Achievement Gaps: How Hispanic and White
    Students in Public Schools Perform in Mathematics and Reading on the National
    Assessment of Educational Progress* (NCES 2011-459). National Center for Education
    Statistics, Institute of Education Sciences, U.S. Department of Education. Washington,
    DC. Retrieved from http://nces.ed.gov/nationsreportcard/pdf/studies/2011459.pdf

Herbert, M. (2012). A Running Start for ELLs: Early learning is key, but some states are not
    making it a priority. *District Administration, July/Aug 2012*. Retrieved from
    http://www.districtadministration.com/article/running-start-ells

ICMN Staff (2015). The White House Aims for Change With Gen-I Native Youth Challenge,
    Indian Country Today Media Network, February 24, 2015. Retrieved from
    https://indiancountrymedianetwork.com/news/politics/the-white-house-aims-for-
    change-with-gen-i-native-youth-challenge/

Kozol, J. (2017). 24 Quotes by Jonathan Kozol, *Famous Quotes.* Retrieved from
    http://www.famous-quotes.cc/authors/jonathan-kozol

Krause, J. (2013). Native American Community Academy: The Power of Embracing Culture.
    Principal Leadership, 13, 9, pp. 46-52 May.

Lohse, C. D. (2008). *Striving to Succeed: Helping Native American Students Succeed.
    American Indian, Alaskan Native and Native Hawaiian Achievement Gap Study*.   National
    Conference of State Legislatures. Retrieved from
    http://www.ncsl.org/Portals/1/documents/statetribe/strivingtoachieve.pdf

Martinez, P. S. (2013). *Towards Ending the Struggle: Bilingual Education and Perceptual Implications for Re-Engineering Student Success In New Mexico*. Unpublished manuscript (doctoral dissertation). Retrieved from https://repository.unm.edu/bitstream/handle/1928/23345/Phyllis%20Martinez%20Final%5B1%5D.pdf?sequence=1

McNeil, M. (2012a). States Punch Reset Button under NCLB, *Education Week*. Retrieved from http://www.edweek.org/ew/articles/2012/10/17/08waiver_ep.h32.html

McNeil, M. (2012b). Waiver Hopefuls Put through Paces by Review Process, *Education Week*. Retrieved from http://www.edweek.org/ew/articles/2012/02/22/21waiver-review.h31.html

McREL, 2003. *Effective Standards-Based Practices for Native American Students: A Review of Research Literature*. Retrieved from http://vdc.cet.edu/pdf/nastudents.pdf

Miksic, M. (2014). *The Persistent Achievement Gaps in American Education*. CUNY Institute for Education Policy. Retrieved from http://ciep.hunter.cuny.edu/the-persistent-achievement-gaps-in-american-education/

Morrison, G. R. (2010). *Designing Effective Instruction*, 6th Edition. John Wiley & Sons.

National Commission on Excellence in Education (NCEE). 1983. *A Nation at Risk: The Imperative for Educational Reform*. Washington, DC: U.S. Government Printing Office.

NCES (2009), *NAEP 2009 High School Transcript Study, 2009*. Retrieved from http://nationsreportcard.gov/hsts_2009/ and http://nces.ed.gov/nationsreportcard/pdf/studies/2011462.pdf

NCES (2011). *The condition of education 2011: Section 1 Participation in Education*. National Center for Education Statistics. Retrieved from http://nces.ed.gov/pubs2011/2011033_2.pdf

NCLB (2002), *No Child Left Behind Act of 2001*, P.L. 107-110, 20 U.S.C. § 6319.

NIH (2016). *Frequently Asked Questions About Genetic and Genomic Science*. National Human Genome Research Institute, National Institutes of Health. Retrieved from https://www.genome.gov/19016904/faq-about-genetic-and-genomic-science/

NIES (2016). *National Indian Education Study*. National Center for Education Statistics (NCES). Online at http://nces.ed.gov/nationsreportcard/nies/

NMPED (2010a). *A World Class Education: Strategic Plan, 2010-2015.* New Mexico Public Education Department. Retrieved from http://files.eric.ed.gov/fulltext/ED514490.pdf

NMPED (2010b). *Making Schools Work. 2010 Annual Report*. New Mexico Public Education Department. Retrieved from http://files.eric.ed.gov/fulltext/ED514487.pdf

NMPED (2013). *Hispanic Education Report for the School Year 2012-2013*. New Mexico
Public Education Department. Retrieved from
http://ped.state.nm.us/BilingualMulticultural/Hispanic%20Education%20Report%20S
Y%2012%2013%20VFINAL.pdf

NMPED (2015a). *State Seal of Bilingualism & Biliteracy*, Bilingual Multicultural Education
Bureau, New Mexico Public Education Department. Retrieved at Retrieved from
http://ped.state.nm.us/ped/Bilingual_Seal.html

NMPED (2015b). *Hispanic Education Status Report 2015*. New Mexico Public Education
Department. Retrieved from
http://www.ped.state.nm.us/ped/BilingualDocs/Hispanic%20Education%20Report%2
014.15.pdf

NMPED (2016a). New Mexico Accountability Data. Assessment & Accountability Division,
New Mexico Public Education Department. Online at
http://ped.state.nm.us/assessmentaccountability/AcademicGrowth/NMSBA.html

NMPED (2016b). *State of New Mexico, Diploma of Excellence, Bilingualism and Biliteracy
Seal, Guidance Handbook 2015-2016*. Bilingual Multicultural Education Bureau, New
Mexico Public Education Department. Retrieved from
http://ped.state.nm.us/ped/BilingualDocs/Seal%20Handbook%20Final.pdf

NMSA (2015c). *Indian Education Act* [22-23A-1 to 22-23A-8 NMSA 1978]. Retrieved from
http://www.ped.state.nm.us/indian.ed/dl08/ARTICLE.23A.pdf and
http://164.64.110.239/nmac/parts/title06/06.035.0002.htm

Olguin, D. L.; Keim, J. (2009). Using Stakeholders as Career Bridges to Advance Students'
Academic Performance: How Would You Like Your Stake? *Journal of School Counseling,
7, 22*. Retrieved from http://files.eric.ed.gov/fulltext/EJ886136.pdf

Peterson, P. E. (2016). The End of the Bush-Obama Regulatory Approach to School Reform,
Education Next. Retrieved from http://educationnext.org/end-of-bush-obama-
regulatory-approach-school-reform-choice-competition/

Potter, H., Quick, K., & Davies, E. (2006). *A New Wave of School Integration: Districts and
Charters Pursuing Socioeconomic Diversity*. The Century Foundation. Retrieved from
https://tcf.org/content/report/a-new-wave-of-school-integration/

Quinn, D. (2014). *Kindergarten Black-White Test Score Gaps: Replicating and Updating
Previous Findings with New National Data.* Conference proceedings, SREE Spring 2014.
Retrieved from http://eric.ed.gov/?id=ED562790

Quinn, D. M. (2015). Kindergarten Black-White Test Score Gaps: Re-Examining the Roles of
Socioeconomic Status and School Quality with New Data. *Sociology of Education, 88, 2*,
120-139. Retrieved from
http://www.asanet.org/sites/default/files/savvy/journals/soe/Apr15SOEFeature.pdf

Ratcliff, N. J.; Costner, R. H.; Carroll, K. L.; Jones, C. R.; Sheehan, H. C.; Hunt, G. H. (2016). Causes of and Solutions to the Achievement Gap: Teachers' Perceptions, *Teacher Educators' Journal*, v9 p97-111 Spr 2016. Retrieved from http://files.eric.ed.gov/fulltext/EJ1095644.pdf

Reardon, S. F. (2013). No Rich Child Left Behind. *The New York Times, Opinionator, 27 Apr. 2013*. Web. 23 Mar. 2015. Retrieved from http://opinionator.blogs.nytimes.com/2013/04/27/no-rich-child-left-behind/

Reardon, S. F. & Galindo, C. (2009). The Hispanic-White Achievement Gap in Math & Reading in Elementary Grades. *American Educational Research Journal, 46, 3*, pp. 853-891. Retrieved from http://journals.sagepub.com/doi/pdf/10.3102/0002831209333184

Rossett, A. (1987) Training Needs Assessment. Englewood Cliffs, NJ: Educational Technology Publishing Co.

Rumbaut R. G. (2006). The Making of a People. In: National Research Council (US) Panel on Hispanics in the United States; Tienda M, Mitchell F, editors. *Hispanics and the Future of America*. Washington (DC): National Academies Press (US); 2006. 2. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK19896/

SEDL (2016). New Mexico Achievement Gap Research Alliance. Retrieved from http://relsouthwest.sedl.org/research-alliances/new_mexico_achievement_gap.html

Teach For America (2011a). *Diversity, Community, & Achievement*. Self-published Manuscript: Teach for America. Retrieved from http://www.teachingasleadership.org/sites/default/files/Related-Readings/DCA_2011.pdf

Teach for American (2011b). *Race, Class, and the Achievement Gap: The Promise of Student Potential, in Diversity, Community, & Achievement*. Self-published Manuscript: Teach for America. Retrieved from http://teachingasleadership.org/sites/default/files/Related-Readings/DCA_Ch1_2011.pdf

Tessmer, M. & Wedman, J.F. (1990). A Layers-of-Necessity Instructional Development Model. *Educational Technology Research & Development, 38, 2*, pp. 77-85.

Thomas, W.P., & Collier, V.P. (2012). *Dual Language Education For a Transformed World*. Albuquerque, NM: Dual Language Education of New Mexico - Fuente Press.

U.S. Census Bureau (2015). *Public Education Finances: 2013; Economic Reimbursable Surveys Division Reports*. U.S. Department of Commerce, U.S. Census Bureau. Retrieved from https://www.census.gov/content/dam/Census/library/publications/2015/econ/g13-aspef.pdf

USCB (2015 update). *Quick Facts: New Mexico*. United States Census Bureau, U.S. Department of Commerce. Retrieved from http://www.census.gov/quickfacts/table/EDU635215/35

Valentino, R. A., & Reardon, S. F. (2014). Effectiveness of four instructional programs designed to serve English Learners: Variations by ethnicity and initial English proficiency. *Educational Evaluation and Policy Analysis*. Retrieved from https://cepa.stanford.edu/sites/default/files/Valentino_Reardon_EL%20Programs_12_15_14.pdf

Weissglass, J. (2001). Racism and the Achievement Gap. *EdWeek, 20, 43*, pp. 49,72. Retrieved from http://www.edweek.org/ew/articles/2001/08/08/43weissglass.h20.html

What Works Clearinghouse (2006). *Dialogic Reading. What Works Clearinghouse Intervention Report*. Retrieved from http://files.eric.ed.gov/fulltext/ED493769.pdf

What Works Clearinghouse (2015). *Developmental Summer Bridge Programs. What Works Clearinghouse Intervention Report*. Retrieved from http://files.eric.ed.gov/fulltext/ED539188.pdf

Whitehurst, G. J. & Croft, M. (2010). *The Harlem Children's Zone, Promise Neighborhoods, and the Broader, Bolder Approach to Education*, The Brookings Institution. Retrieved from https://www.brookings.edu/research/the-harlem-childrens-zone-promise-neighborhoods-and-the-broader-bolder-approach-to-education/

APPENDIX A: LEGISLATIVE HISTORY

This appendix provides a brief history of federal legislation designed to address inequity in American education.   We believe that it is important to have at least a general understanding of the history in order to know why all education systems are required to address the issue.

Civil Rights Act of 1964. With the Civil Rights Act of 1964, the Commissioner of the Office of Education was charged with producing a report, later to be known as the *Equality of Educational Opportunity* report, or "Coleman Report" (Coleman et al, 1966), to address the problem "concerning the lack of availability of equal educational opportunities for individuals by reason of race, color, religion, or national origin in public educational institutions at all levels in the United States, its territories and possessions, and the District of Columbia."

The Coleman Report. After assessing a sample of 4,000 schools, including 600,000 students nationwide, the *Equality of Educational Opportunity* report, or "Coleman Report" (Coleman et al, 1966) as it came to be called, provided a myriad of controversial findings that are still debated to this day (Hanushek, 2016). What is fundamental to assessing gaps in educational achievement, however, is that the report provided a stark picture of achievement gaps, as well as a baseline, that enables us to see whether progress has since been made, or not.

The Elementary and Secondary Education Act (ESEA). In the intervening years between 1964 and the end of the century, combined with various intertwining pieces of legislation, including iterations of the ESEA (1965), both before and after the Office of Education/U.S. Department of Education (ED) was elevated to a cabinet-level position in 1979, came a greater focus on conducting national academic assessments on a regular basis, and disaggregating the data by population subgroups.

National Assessment of Academic Progress (NAEP). In the years that followed, ED began implementing the NAEP, the largest national assessment of what students in grades 4, 8, and 12 know and can do in a variety of subjects, most notably mathematics, reading, writing, and science. Grades 4 and 8 are assessed in math and reading every two years, with other subjects on a staggered schedule by subject, grade and age. We reference NAEP often in this paper because it provides the most reliable and stable trend data for student performance disaggregated by state, ethnicity, gender, language status, and other variables.

No Child Left Behind Act of 2001 (NCLB). In this century, early in the first term of President George W. Bush, we saw a greater focus on student testing and on achievement gaps emerge with NCLB, another reauthorization and iteration of ESEA. NCLB required that states themselves also assess their achievement gaps by disaggregated groupings and levels of "proficiency" and that student progress be assessed to close those gaps over time.

Still, the rule for making Adequate Yearly Progress (AYP) is defined by states and usually means that the goal is continuous growth in students' achievement across subgroups, rather than closing gaps, especially in reading and mathematics. (Anderson, Medrich, & Fowler, 2007).

At first, NCLB mandated 100 percent academic proficiency targets for all students, an obviously unrealistic pursuit for the times. Despite being granted a waiver in 2012 on several other NCLB standards, the state education agency in New Mexico (SEA, Public Education Department, NMPED, PED) held itself to the 100 percent proficiency target in principal (McNeil, 2012a, 2012b). It was perhaps symbolic of its core belief that all

students, regardless of subgroupings like ethnicity and language status, shall meet academic proficiency standards. While its goals and objectives may therefore be commendable in principle, the state's actual achievement outcomes remain less than optimal.

      Every Student Succeeds Act of 2015 (ESSA). More recently, late in the second term of President Barack Obama, another iteration of the ESEA was signed and enacted into law: the *ESSA* (2015). Under ESSA, states are required to set goals that close achievement gaps and graduation rates among student groups considered to be most at risk of achieving further behind their higher-performing peers (Education Week, 2015). Testing remains a requirement, but state and local education agencies are now allowed more flexibility on how testing is used (Peterson, 2016).