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November 13, 2006

MEMORANDUM

TO: Legislative Education Study Committee

FR: Pamela Herman

RE: STAFF BRIEF: THE GENDER GAP IN EDUCATION

The 2006 Interim Workplan of the Legislative Education Study Committee (LESC) includes a presentation regarding gaps in academic achievement between male and female students in New Mexico and the nation.

Issues:

Nature of the Gender Gap

The Education Commission of the States (ECS) reports that the recent use of assessment data to gauge student achievement is drawing increasing attention to significant academic performance gaps based on student gender. These gaps exist at both the national and state levels from elementary school onward, as illustrated by the summary points noted below and by the details enumerated in the attachment.

According to national data from a variety of sources:

- Male students tend to be less proficient than females in reading and writing, and the gaps in reading proficiency widen when gender is combined with race and economic status.

- Male students outnumber females in special education, especially among students diagnosed with emotional disturbances, autism, and attention deficit hyperactivity disorder.
- Male elementary school students are more likely than females to be held back a grade, and male students in general are almost twice as likely as females to have been suspended from school at least once by the age of 17.
- Male students are less likely to graduate from high school, and males have earned fewer bachelor's and master's degrees than females since the 1980s.

Student achievement data for New Mexico likewise reveal a gender gap. To illustrate:

- Male students in New Mexico tend to be less proficient in reading and writing than females; and, although they do tend to outperform females in math, they do so by smaller margins. In some grades, in New Mexico, no gender gap exists in math.
- Like male students elsewhere, male students in New Mexico are less likely than females to graduate from high school, and they have earned a declining share of academic credentials awarded by public institutions of higher education (IHEs) in the state.

Causes of the Gender Gap

The reasons for achievement gaps between male and female students are subject to debate; however, scientific research, including some results compiled by the Educational Testing Service (ETS), has identified a number of differences in neurological and cognitive development based on gender that may contribute to gaps in student achievement. In most cases females have the advantage while in others the advantage goes to the males:

- women tend to perform better than men on tasks of verbal memory;
- women possess a greater density of neurons in parts of the temporal-lobe cortex associated with language processing and comprehension;
- in girls, the prefrontal cortex that governs complex thoughts and impulse control matures 11 to 18 months earlier than for boys;
- in girls, processing speed on some moderately difficult types of tasks on intelligence tests, such as those involving language fluency and math computation, develop earlier, producing a gap that is evident in elementary school, widens in middle and high school, and narrows in adulthood;
- men tend to show some advantage on most spatial tests; and
- men tend to score higher on tests of mathematical reasoning or problem-solving.

Advocates for boys – including educators, physicians, social scientists, and journalists – point to several other factors that they argue may contribute to the achievement gap. These include:

- Low percentages of male teachers, especially in elementary and middle schools:
 - A study on the effect of teacher gender on student performance based on national data and published in fall 2006 indicates that test scores improve when students are taught by a teacher of their gender and decline when taught by a teacher of a different gender; and

- Commentators suggest that female teachers don't understand boys' interests in things like bodily functions or contact sports, and that they perceive boys to be more disruptive.
- Learning differences between boys and girls that favor girls and discourage boys in traditional classrooms. One educator observes that boys' natural learning assets include impulsivity, single-task focus, spatial-kinesthetic learning, and aggression, and that they learn best through lessons broken into shorter, more action oriented segments than girls.
- Social and emotional differences and difficulties that boys experience when they are brought up without fathers.
- A commercial culture that devalues school and book learning, especially for boys, and encourages violence and aggression.
- One advocate for gender specific education sums up the situation as follows:

for the average boy, school is not as good a fit as it is for the average girl. More boys have problems with attention and focus than girls. Because of their higher activity level, boys are likely to get into more trouble than girls. And they are not given enough opportunities to move around – both in actual physical activity and in how they learn – because they spend too much time sitting and not enough time learning by doing, making, and building things.

While all of these broad arguments may have merit, ETS echoes the caution of other researchers against making assumptions about individual students based on such generalizations, pointing out that, on virtually any measure, individual women and men vary far more than do the two groups.

Strategies for Addressing the Gender Gap

In response to a growing public awareness and concern regarding the gender gap in academic achievement, researchers and advocates for boys have proposed solutions to close the gap. One focus has been to change teaching practices to better address the different learning styles of boys and girls. Douglass Elementary School in Boulder, Colorado, is addressing a significant literacy gap among its 470 students by introducing more “boy-friendly” teaching practices into its classrooms with the help of an outside consultant. Some of the practices Douglass has implemented include the following:

- use of manipulatives;
- task-oriented discussions;
- use of visual planning tools such as storyboards for writing assignments;
- allowing boys to choose reading and writing topics that appeal to them (such as action heroes and adventure scenarios);
- providing authentic, real-life connections that make assignments purposeful;
- bringing more male role models into the classroom;
- developing strategies in partnership with parents to help boys attend to and complete their homework; and
- offering some single-sex groupings to work on assignments in classrooms.

Over school year 2005-2006, Douglass students overall gained 21.9 points on the Colorado state assessment, the largest gain in its district; boys saw a 24.4 point gain; and girls a 19 point gain. Special education students saw the biggest increase of all, a gain of 50 points.

Much of the current public debate about the gender gap focuses on single-sex schooling, a practice permitted under the federal *No Child Left Behind Act of 2001*. In 2005, the US Department of Education (USDE) published a review of research of the benefit of single-sex education. This review determined that, while the results were equivocal and the research limited, there is a degree of support for the premise that single-sex schooling can be helpful, especially for certain outcomes related to academic achievement and more positive academic aspirations for both male and female students.

In response to the growing interest in single-sex schooling, in October 2006, USDE published its final rule regarding nondiscrimination based on sex under Title IX of the Education Amendments of 1972, to “clarify and modify Title IX regulatory requirements pertaining to the provision of single-sex schools, classes and extracurricular activities in elementary and secondary schools.” The rule establishes new standards that the federal Office of Civil Rights will use to determine whether recipients operating single-sex classes, activities, or schools are in compliance with Title IX:

- **Single-sex classes:** A recipient that operates a non-vocational coeducational school may provide non-vocational single-sex classes or activities if:
 - each class or activity is based on the recipient’s important objective to improve educational achievement and is designed to meet the particular, identified educational needs of its students;
 - the class or activity is substantially related to the important objective;
 - the objective is implemented in an evenhanded manner;
 - enrollment is completely voluntary; and
 - all other students, including those of the excluded sex, are provided a substantially equal single-sex or coeducational class or activity.
- In addition, the recipient must conduct evaluations at least biennially to ensure that the single-sex classes or activities are based upon genuine justifications rather than a reliance upon overly broad generalizations about the different talents, capacities or preferences of either sex, and that they are substantially related to the achievement of the important objective.
- **Single-sex schools:** A recipient that operates a public non-vocational elementary or secondary school that excludes any student on the basis of sex must provide excluded students with a substantially equal single-sex or coeducational school. However, an operator of a single-sex non-vocational public charter school that is a local educational agency under any state law is exempt from this requirement.
- Substantial equality is determined by considering such factors as the policies and criteria for admission, the educational benefits provided, the qualifications of faculty, geographic accessibility, facilities and resources, and intangible features such as the reputation of faculty.

The states of Michigan and Wisconsin have passed laws that provide for single-sex classes or schools. School districts in Ohio, New York, Kentucky, Illinois, South Carolina, and Texas all have some single sex schools, and the number of public schools nationwide that provide single-sex classes or schools has grown from five in 1995 to at least 241 nationwide in 2006.

In New Mexico, Van Buren Middle School in Albuquerque Public Schools (APS) is offering a pilot program of single-sex classes for school year 2006-2007. APS states that Van Buren is offering one classroom each for girls and for boys in math and English in grades 7 and 8. Students elected voluntarily to participate in the pilot project, with parental permission.

Finally, approaching the issue from the perspective of ethnicity, the nonprofit advocacy organization ¡Excelencia! in Education made the following recommendations to state legislators attending a recent meeting of the National Conference of State Legislatures (NCSL) regarding the issue of gender gaps in educational achievement that are particularly pronounced for Latino and other minority males:

- Contract for research to define the extent of the enrollment and achievement gap in each state by gender and race/ethnicity and link those findings with research on the future impact upon the state workforce.
- Be aware of the economic tradeoffs for low-income students (that is, staying in school versus seeking employment) and provide incentives to address these tradeoffs.
- Use the power of the public stage to inform the public of current achievement gaps and solicit promising practices at the community, school, district, and state levels.
- Develop a statewide action plan of “intentionality” to focus on Latinos and other minority males, but not at the expense of other students.

Economic Factors

The gender-based achievement gaps notwithstanding, males still have the advantage in earning power. According to a 2001 ETS study that looked at achievement gaps by gender and ethnicity and that highlighted differences in earnings and education based on gender:

- White, African-American, and Hispanic male high school graduates earn more than females in the respective ethnic groups, although since 1975 the gaps have decreased. The largest difference is for white high school graduates, among whom males earned 1.7 times as much females.
- White, African-American, and Hispanic male college graduates earn more than females. These gaps are decreasing, although faster for whites and Hispanics than for African-Americans.

These gender-based earnings gaps are a concern in part because, as ¡Excelencia! in Education points out, they may influence young men to choose employment over education when to do so is not in their best interests in the long term.

Presenter:

Ms. Kelley King, Principal, Douglass Elementary School, Boulder Valley School District, Colorado, will describe the strategies that Douglass Elementary is using to address its academic achievement gender gap, and the results of those strategies.

Questions the committee may wish to consider:

1. How can New Mexico schools best ensure that each child has a full opportunity to develop his or her potential regardless of gender?
2. What pedagogical, legal, and practical issues might single-gender classes or schools raise?
3. To what extent do teacher preparation programs address gender gaps in student achievement or in student learning patterns?

NATURE OF THE GENDER GAP: NATIONAL AND STATE DATA

According to national data from a variety of sources:

- Male students tend to be less proficient than females in reading and writing. On the 2005 National Assessment of Educational Progress (NAEP), female students outscored males in reading and writing at all grade levels and for all racial and ethnic groups. Males outscored females in mathematics, but by smaller margins.
- Achievement gaps in reading are even more substantial when gender is combined with race and economic status. For example, on the 2005 4th grade NAEP reading test, white females scored 32 points higher than Hispanic males, 33 points higher than African-American males, and 37 points higher than Native American males.
- Male students outnumber females in special education. United States Department of Education (USDE) data show that males comprise two-thirds of students in special education. More specifically, males comprise approximately 80 percent of all students diagnosed with emotional disturbances or autism and approximately 70 percent of those diagnosed with attention deficit hyperactivity disorder.
- Male elementary school students are more likely than females to be held back a grade, according to USDE, and racial and economic differences in grade retention widen this gap.
- Male students are almost twice as likely as females to have been suspended from school at least once by the age of 17, according to a report from the US Department of Justice.
- Male students are less likely to graduate from high school. A Manhattan Institute study of national dropout rates shows that, for the class of 2003, approximately 65 percent of male students graduated compared with 72 percent of female students, and the gender gap for minority students was greater than that for white and Asian students.
- The number of students of both genders earning college degrees continues to grow, but it grows faster for female students than for male students.
 - Males have earned fewer bachelor's degrees than females every year since 1981-1982, according to the National Center for Education Statistics (NCES). In 2003-2004, they earned approximately 43 percent of all bachelor's degrees.
 - Males have also earned fewer master's degrees than females every year since 1985-1986, NCES data show; in 2003-2004, they earned approximately 41 percent of all master's degrees.
 - Male students earned slightly more than half of all doctorates in 2003-2004, but their share of the total declined from approximately 70 percent in 1979-1980.
 - Male graduates no longer outnumber females in disciplines such as business, social sciences, and biological sciences. However, female students still earn a relatively small percentage of degrees in computer science and engineering.

In New Mexico, a similar gender gap in student achievement exists. To illustrate:

- Male students in New Mexico tend to be less proficient in reading and writing than females; and, while they tend to outperform females in math, they do so by smaller margins.
 - On the most recent NAEP assessments;
 - ◆ in reading, male students scored 9 points lower than females in 4th grade and 5 points lower in 8th grade;
 - ◆ in writing, males scored 13 points lower than females in 4th grade and 18 points lower in 8th grade;
 - ◆ in math, males scored 4 points higher than females in 4th grade and 2 points higher in 8th grade; and
 - ◆ in science, males scored 3 points higher than females in 4th grade and 7 points higher in 8th grade.
 - On the 2006 New Mexico standards-based assessments, the Public Education Department indicates that scores also showed gender gaps that varied by grade and subject, as follows:
 - ◆ In reading, the percentage of male students at or above proficiency was lower than that of female students by nine to 15 percentage points, depending on grade level.
 - ◆ In math, the percentage of male students at or above proficiency was slightly higher than that of female students in some grades and the same or slightly lower in other grades.
- Male students, in New Mexico as elsewhere, are less likely than females to graduate from high school, according to the Manhattan Institute. Approximately 56 percent of male students in the high school class of 2003 graduated, compared with approximately 64 percent of females. The same report states that, in Albuquerque Public Schools, the state's largest district, approximately 51 percent of male students graduated in 2003 compared to approximately 62 percent of females.
- Male students earned a declining share of academic credentials awarded by New Mexico public institutions of higher education in the 11 years between school years 1994-1995 and 2004-2005. Higher Education Department data show that the percentage of degrees or certificates awarded to males declined as follows:
 - for certificates, from approximately 47.8 to 42.1 percent;
 - for associate degrees, from approximately 34.0 to 32.1 percent;
 - for bachelor's degrees, from approximately 44.9 to 40.8 percent; and
 - for graduate degrees, from approximately 46.4 to 40.4 percent.