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FISCAL IMPACT REPORT

ORIGINAL DATE 2/13/09

SPONSOR Arnold-Jones LAST UPDATED _____ HB 322

SHORT TITLE Increase Teacher License Math Requirement SB _____

ANALYST Hoffmann

APPROPRIATION (dollars in thousands)

| Appropriation | | Recurring or Non-Rec | Fund Affected |
|---------------|-------|-------------------------|------------------|
| FY09 | FY10 | | |
| | \$0.1 | Recurring | General Fund |

(Parenthesis () Indicate Expenditure Decreases)

SOURCES OF INFORMATION

LFC Files

Responses Received From

Department of Finance and Administration (DFA)

Public Education Department (PED)

Higher Education Department (HED)

SUMMARY

Synopsis of Bill

House Bill 322 proposes to amend Section 22-10A-6 NMSA 1978 by increasing the number of credit hours of the math requirement from six to nine for a person seeking standard or alternative elementary (grades K-8) licensure. For all other teaching licenses the general education math requirement would remain at six hours.

FISCAL IMPLICATIONS

House Bill 322 makes no appropriations.

The PED claims that preparing the rule for this change will require certain resources. It is estimated that the following will be required: 20 hours of an Admin A position for preparing the rule revision and holding a required public hearing (\$25.50 + 30% benefits) = \$663. Advertising and associated fees for legal notices of the rule change are estimated at \$200.

SIGNIFICANT ISSUES

The PED states that this is a Governor Richardson bill. They cite the following data in support of this requirement for teachers.

In *Mathematical Education of Teachers*, the Conference Board of Mathematical Sciences recommends that prospective elementary grade teachers be required to take at least 9 semester-hours on fundamental ideas of elementary school mathematics.

The *Math and Science Town Hall Final Report*, produced as the culmination of a statewide meeting involving over 100 education (K-12 and higher education) and business leaders in New Mexico in 2006, recommended that “Colleges and universities...increase the rigor of mathematics and science requirements for teachers entering teacher education programs and licensure by increasing the number of credit hour requirements and/or the quality of mathematics and science courses.”

In the 2008 administration of the NM Standards Based Assessment, student performance in mathematics was below acceptable levels. Listed below are the percent of students, statewide, that performed at or above the “Proficient” level on the math portion of the NMSBA (an elementary level license is for grades K-8):

| | | | |
|---------|-----|---------|-----|
| Grade 3 | 45% | Grade 6 | 31% |
| Grade 4 | 51% | Grade 7 | 33% |
| Grade 5 | 47% | Grade 8 | 26% |

On the 2007 National Assessment of Educational Progress (NAEP), New Mexico students scored below the national average. In grade 4, 24% of NM students scored at or above Proficient (4th lowest state), compared to 38% nationally. In grade 8, 17% of NM students scored at or above Proficient (3rd lowest), compared to 31 % nationally (http://nationsreportcard.gov/math_2007/m0001.asp).

Foundations for Success: The National Mathematics Advisory Panel Final Report 2008 (www.ed.gov/MathPanel) reported that “it is clear that teachers’ knowledge of mathematics is positively related to student achievement (p. 37). The Report goes on to recommend that “teachers must know in detail and from a more advanced perspective the mathematical content they are responsible for teaching” (p. 38).

The HED notes that this proposed bill would not change the math requirement for secondary teachers who do not teach math. Also this does not change the requirements for middle school teachers to be highly qualified in math and high school teachers to be endorsed in math. Those requirements already far exceed nine credits.

Current general education requirements for undergraduates in teacher preparation programs were put into law by SB106 in 1986. At the time there was not the emphasis there currently is on achievement in mathematics as necessary for careers of the future. While only six credits were required for math, 12 were required for history and six more for social sciences. There have also been 12 credits of general education required from both science and communication arts.

Although achievement in math has been increasing on both the New Mexico Standards-Based Assessment (NMSBA) and the National Assessment of Educational Progress (NAEP), it is still

far below what is necessary for the majority of students entering high school to be ready for the new high school math requirements of four units of math including Algebra II or higher. In 2008 on the Math NMSBA, 37% of New Mexico students in grade 8 were proficient, but on the 2007 NAEP only 17% were proficient in grade 8 math. Through its involvement with the American Diploma Project (ADP), New Mexico has recently aligned its grade 9-12 math standards with the ADP Benchmarks for College and Workplace Readiness (www.achieve.org).

The University of New Mexico had begun requiring nine credits of math for Elementary Education majors in the early 1980s and has continued to require three credits beyond the minimum. Eastern New Mexico University will be increasing the requirement for math to nine hours in their 2009 course catalog. For its Bachelor of Science degree in Elementary Education, Western New Mexico University requires nine or 12 credits depending on the level of courses that a student is able to take.

PERFORMANCE IMPLICATIONS

This bill supports Strategic Issue #3 which emphasizes “Teacher Quality—Qualified Teachers Teaching their Subjects.” It also supports Strategy 1.2 of the *Strategic Action Plan for Advancing Math and Science Education in New Mexico* (www.ped.state.nm.us/MathScience/dl/MathSciStrategicPlanfv.pdf), “Improve the initial pre-service preparation of math and science educators.”

OTHER SUBSTANTIVE ISSUES

According to the PED, the University of New Mexico already requires elementary education students take 9 credit hours of mathematics so this bill would not impact its program. Eastern New Mexico University will be increasing the requirement for math to 9 hours in its 2009 course catalog. At other universities students preparing to become elementary school teachers will have to take an additional three hours in Mathematics.

This bill enacts a recommendation made by the Math and Science Advisory Council in NM Project 2012 (available at www.ped.state.nm.us/MathScience).

ALTERNATIVES

The HED reports that Liping Ma in her 1999 book titled “Knowing and Teaching Elementary Mathematics: Teacher’s Understanding of Fundamental Mathematics in China and the United States” (Lawrence Erlbaum Associates) pointed out that in most elementary schools in China mathematics is taught by specialist math teachers. She showed that those Chinese specialist math teachers tended to have a much more “profound understanding of fundamental math” that they were teaching than did U.S. elementary teachers. The 2007 MSAC Strategic Action Plan referenced above called for the preparation of a report comparing the use of math and science content specialist teachers in grades K-5 with generalist teachers supported by math and science coaches/mentors. If specialist math teachers were used to teach math to several classes of math (and perhaps science), while their students were taught by specialist reading/language arts/social studies teachers, then all teachers would not need to be as highly prepared in math.

WHAT WILL BE THE CONSEQUENCES OF NOT ENACTING THIS BILL

The PED comments that New Mexico mathematics scores will continue to be below the national average.

The HED suggests that education majors at some New Mexico institutions of higher education would not receive the same level of preparation in math content. The state would be less likely to raise math achievement in K-12, as new teachers would lack the necessary skill sets.

CH/mt