F I S C A L I M P A C T R E P O R T

SPONSOR Kernan **ORIGINAL DATE** 3/16/15 **LAST UPDATED** **HB**

SHORT TITLE Study Math Teacher Competency Update **SM** 130

ANALYST Chavez

ESTIMATED ADDITIONAL OPERATING BUDGET IMPACT (dollars in thousands)

	FY15	FY16	FY17	3 Year Total Cost	Recurring or Nonrecurring	Fund Affected
Total		NFI				

(Parenthesis ( ) Indicate Expenditure Decreases)

Relates to HJM 1, HM 83

SOURCES OF INFORMATION
LFC Files

Responses Received From
New Mexico State University (NMSU)
Central New Mexico Community College (CNM)

No Response Received
Public Education Department (PED)

SUMMARY

Synopsis of Bill

Senate Memorial 130 requests that the secretary of the Public Education Department (PED) study the feasibility of updating required competencies in mathematics for entry-level elementary teachers as listed in Section 6.61.2.10 NMAC. The memorial requests that the secretary collaborate with experts in mathematics content and pedagogy, including faculty from school districts and from the colleges of education and the colleges of arts and sciences at NMSU and UNM. PED is requested to report its findings to LESC by December 1, 2015.

FISCAL IMPLICATIONS

PED should be able to perform this study within existing resources. NMSU analysis states that changes to required competencies will more than likely impact higher education institutions, but until those changes are determined, the impact is difficult to determine.

SIGNIFICANT ISSUES

PED began meeting with deans and provosts of New Mexico institutions of higher education (IHEs) and colleges of education (COEs) during the 2013 interim to discuss raising admissions standards and expectations for teacher and principal preparation programs and their participants. According to presentations given to these organizations, discussions included establishing new admissions requirements for teacher and principal preparation programs, increasing expectations for student teaching/principal clinical experience, raising the rigor of the licensure exit exam, including a priority on content knowledge, and eliminating unnecessary barriers to becoming a teacher or school leader. (PED, "Elevating the Rigors of Teaching Assessments, November 2013.) However, to date it does not appear PED has discussed changes to department regulations.

CNM analysis notes regulations are outdated in regards to both math content standards (common core) and the evolving nature of STEM instruction in the state. However, CNM analysis also expresses concern that not all sectors of higher education are represented in the workgroup, noting that community colleges produce a significant number of elementary teacher education graduates, including 260 from CNM since 2010. These students complete the first two years of teacher education at CNM and other two-year institutions before going on to a four-year institution. CNM adds that comprehensive institutions, specifically WNMU and ENMU, which have strong regional teacher education programs, should also be included in the work group. Finally, CNM notes that other groups that currently examine improvement of teacher education, such as the Deans and Directors of Colleges of Education, should be incorporated into the work group established by this memorial.

Finally, the Math and Science Advisory Council (MSAC), is established in statute under Section 22-15E-1 NMSA 1978. The duties of the council include making "recommendations to the bureau and the department regarding the statewide strategic plan for improving mathematics and science education" and to produce an annual report on public elementary and secondary mathematics and science student achievement (22-15E-5 NMSA 1978). The MSAC is required to hold quarterly meetings and produce an annual report. The most recent report can be found at http://ped.state.nm.us/ped/MathandScienceDocs/Annual%20Report%20%202014.pdf. It is not clear whether the MSAC would take part in the study for this memorial.

PERFORMANCE IMPLICATIONS

NMSU states updating regulations could lead to more prepared elementary teachers, likely resulting in improved public education student outcomes.

ADMINISTRATIVE IMPLICATIONS

The memorial requests PED to study the feasibility of updating competencies in mathematics and to report on progress to the LESC. The department should be able to meet the requests of the memorial within existing resources.

RELATIONSHIP

HJM 1 requests that the New Mexico Activities Association (NMAA) and PED create a statewide science, technology, engineering and math (STEM) championship program and

develop extracurricular and co-curricular clubs and activities related to STEM.

HM 83 includes requests that PED convene a high school mathematics education task force to review policies, practices and causes associated with parents who choose to opt students out of the Algebra II math requirement and that HED research the potential financial and academic impacts of including incentives in the higher education funding formula for awarding degrees to education students who commit to teaching science and mathematics.

OTHER SUBSTANTIVE ISSUES

Required competencies currently required under Section 6.61.2.10 NMAC for mathematics are as follows:

(a) The teacher understands mathematical concepts including but not limited to:
  (i) the arithmetic of real numbers and their subsets of rational numbers, integers, and whole numbers;
  (ii) three dimensional geometry based on the concept of distance, and two dimensional geometry as a method of drawing plans and representing three dimensional objects;
  (iii) elements of algebra including elementary functions;
  (iv) measurement of length, angles, time, weights, and temperature; and
  (v) handling money problems such as cost and unit price.

(b) The teacher demonstrates skill including but not limited to:
  (i) mental computations and proper use of four operation and non-programmable scientific calculators in the context of problem-solving;
  (ii) constructions of solids, measurements of their volumes and surface areas, drawing their projections, and making plans for their construction;
  (iii) defining relevant variables and writing formulas describing their relationships in problem-solving activities; and
  (iv) using measurement tools and appropriate techniques for recording data and displaying results.

(c) The teacher demonstrates adequate communication skills to be able to discuss mathematical ideas verbally and in writing.

(d) The teacher knows a variety of teaching techniques and chooses ones appropriate to the topic of study and the level and needs of students.

(e) The teacher constructs situations in which students learn to use a variety of mathematical skills and concepts, including problem solving, reasoning, and logic.

(f) The teacher provides opportunities for students to learn how to use tools, technology, and manipulatives in problem solving.

(g) The teacher uses measurements and other data gathered by students as a basis for classroom activities.

(h) The teacher provides a classroom environment in which students develop skills in communicating, discussing, and displaying mathematical ideas.

(i) The teacher provides enough open-ended problems and activities to allow students to expand creatively on the material learned in classrooms.

KC/je