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LEGISLATIVE EDUCATION STUDY COMMITTEE
BILL ANALYSIS
54th Legislature, 2nd Session, 2020

Bill Number	<u>SB42</u>	Sponsor	<u>Papen</u>
Tracking Number	<u>.216111.1</u>	Committee Referrals	<u>SEC/SFC</u>
Short Title	<u>Pilot Project for Early Physics Education</u>		
Analyst	<u>Kennedy</u>	Original Date	<u>2/12/2020</u>
		Last Updated	<u></u>

BILL SUMMARY

Synopsis of Bill

Senate Bill 42 (SB42) would create a five-year early physics education pilot project, administered by the Public Education Department (PED), to provide hands-on, age-appropriate physics education to sixth, seventh, and eighth grade students. SB42 would require the evaluation of the longitudinal impacts of the pilot project on academic performance, high school course selection, and post-secondary interest declarations.

SB42 would create the early physics education fund, a reverting fund that consists of appropriations, grants, gifts, and donations. Money in the fund would be subject to appropriation by the Legislature to carry out the purposes of the early physics education pilot project. Expenditures from the fund would be by warrants of the secretary of the Department of Finance and Administration drawn pursuant to vouchers signed by the secretary of PED or the secretary's authorized representative.

SB42 would appropriate \$600 thousand to the early physics education fund to carry out the provisions of the early physics education pilot project.

FISCAL IMPACT

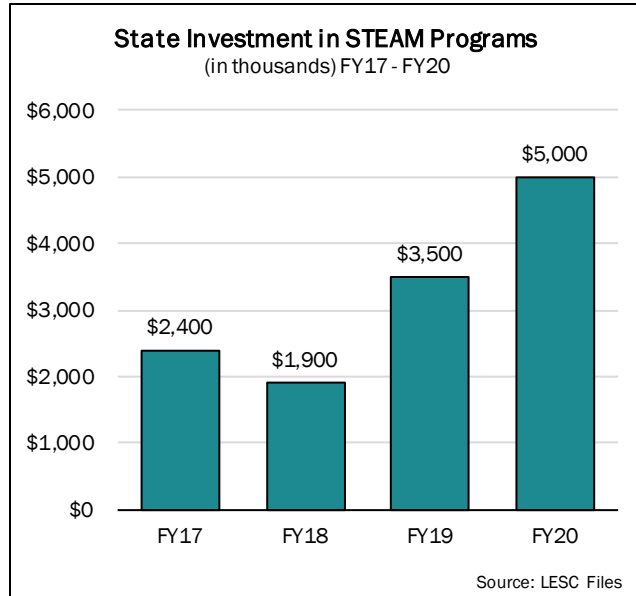
The bill appropriates \$600 thousand from the general fund to the early physics education fund for expenditure in FY21 through FY26. Any unexpended or unencumbered balance remaining at the end of FY26 shall revert to the general fund.

The House Appropriations and Finance Committee Substitute for House Bills 2 and 3 includes \$5 million for PED's science, technology, engineering, arts, and mathematics (STEAM) initiative.

SB42 requires school districts to provide one-half of the funding for early physics education programs created pursuant to the early physics education pilot project.

SUBSTANTIVE ISSUES

Despite significant investment in STEAM programs, statewide science proficiency rates have decreased 5 percent in the last three years. Investment in effective, differentiated STEAM programs is needed to improve student outcomes. In 2017, PED adopted the NM STEM Ready! Science Standards (NMSRSS), which combine the national Next Generation Science Standards and six New Mexico-specific standards, to improve the rigor of STEAM instruction. State funding for STEAM initiatives has increased considerably in the past several years. Despite these investments and new initiatives, only 35 percent of New Mexico students were proficient in science in FY19.



Developing robust early STEAM education is consistent with national best practices and will help prepare New Mexico students for a changing economy. Federal agencies and national STEAM organizations report early experience and achievement in STEAM affects students’ attitudes about and confidence in STEAM for their entire school careers and into college and the workforce. Analyses by the National Science Foundation suggest STEAM education plays a critical role in preparing students to enter STEAM majors and careers. According to the U.S. Bureau of Labor Statistics, STEAM-related job sectors are projected to grow significantly through 2026. The Department of Workforce Solutions (DWS) reports qualified candidates in fields such as engineering, medicine, physics, and computer technology are in high demand, especially in rural areas of New Mexico.

Instructor Capacity. Effective professional development is necessary to build the capacity of school districts to successfully implement the early physics education pilot project. New Mexico State University’s Southwest Outreach Academic Research Evaluation and Policy Center reports math and science are the subjects with the first and second highest teacher vacancy rates, respectively. Implemented well, the professional development described in SB42 may be sufficient to prepare teachers to effectively administer early physics education. However, national research finds most professional development is not high quality and does little to improve performance. Moreover, despite the fact that the vast majority of funding for STEAM programs in recent years has been allocated to regional education cooperatives for professional development, statewide science proficiency rates have declined. Quality professional development is focused on content, actively engages teachers, fosters collaboration, provides a model for assessments, embeds

coaching, allows for feedback, and is sustained over time. Any contract for professional development made pursuant to the early physics education pilot project should include these critical elements.

ADMINISTRATIVE IMPLICATIONS

PED Responsibilities. SB42 would direct PED to administer the early physics education pilot project and select for participation as many public schools as qualify, but no fewer than 10. SB42 would require the selected public schools to be generally distinct from one another in urban or rural character, geographic location, and concentration of poverty, but does not include other qualification criteria.

SB42 would also direct PED to establish reporting requirements for participating public schools and school districts, evaluate those reports, and make its own interim and final reports to the governor and the Legislature on the efficacy of the pilot project.

School District Responsibilities. School districts would have the option to apply on behalf of their public schools to PED, on a form and in a manner as provided by PED, to receive a grant from the early physics education fund. SB42 would direct school districts to contract with an organization that provides professional development and materials for teachers to introduce physics education into sixth through eighth grade curricula.

School districts would be required to evaluate participating students at the beginning of the program and track their progress as measured by standardized assessments, longitudinal evaluations, declarations of student interest on annual next-step plans, and any other evaluation tools required by PED. Pursuant to rules promulgated by PED, school districts would be required to report this data to PED.

TECHNICAL ISSUES

As currently written, SB42 would authorize only school districts to apply for grants pursuant to the early physics education pilot project. State-chartered charter schools, which account for more than half of charter schools in New Mexico, would be ineligible for funding.

OTHER SIGNIFICANT ISSUES

Analysis from PED notes NMSRSS provides for hands-on instruction in physical science, as well as life, earth, and space sciences, for all students in kindergarten through 12th grade and professional development. According to Achieve, Inc., a nonpartisan education reform organization, the changes required to successfully implement these standards are significant enough that even the most veteran educators and school leaders will require support, including effective professional development and high quality instructional materials.

RELATED BILLS

Relates to HB71, Teen Technology Center Programs, which appropriates \$2 million to DWS to establish and administer teen technology center programs in five New Mexico cities to immerse students in STEAM.

Relates to HB125, Portable Planetarium For Bilingual STEM Ed, which appropriates \$138 thousand to PED to contract with a nonprofit organization to provide public school students a bilingual STEAM learning experience within a portable planetarium.

Relates to HB287, Grant County School STEAM Programs, which appropriates \$150 thousand to PED to contract with an organization in Grant County that will provide summer academy camps in STEAM to seventh through 12th grade students.

Relates to HB296, Student Prep for STEM Careers, which appropriates \$250 thousand to the board of regents of New Mexico Institute of Mining and Technology for pre-college after-school and summer enrichment programs that prepare students for careers in STEAM.

Relates to SB21, Development and Support of Robotic Teams, which appropriates \$1 million to PED for the development and support of STEAM programs in middle schools and high schools, including robotics teams.

Relates to SB155, Early Physics Education Pilot Project Funding, which appropriates \$600 thousand to PED to design and implement a five-year pilot project for early physics education for sixth through eighth grade students.

Relates to SB205, Southwest NM School STEM Programs, which appropriates \$225 thousand to PED to provide real-world and hands-on STEM training for students in southwest New Mexico.

SOURCES OF INFORMATION

- LESC Files
- Public Education Department (PED)

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