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

<b>Bill Number</b>	<u>SB155</u>	<b>Sponsor</b>	<u>Papen</u>
<b>Tracking Number</b>	<u>.216655.1</u>	<b>Committee Referrals</b>	<u>SEC/SFC</u>
<b>Short Title</b>	<u>Early Physics Education Pilot Project Funding</u>		
<b>Analyst</b>	<u>Kennedy</u>	<b>Original Date</b>	<u>1/30/2020</u>
		<b>Last Updated</b>	<u>2/7/2020</u>

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**BILL SUMMARY**

Synopsis of Bill

Senate Bill 155 (SB155) would appropriate \$600 thousand to the Public Education Department (PED) to design and implement a five-year early physics education pilot project for sixth through eighth grade students. SB155 requires the pilot project to incorporate age-appropriate physics education curricula and test whether early physics education will increase general academic performance and encourage interest in postsecondary education and careers in science and mathematics.

**FISCAL IMPACT**

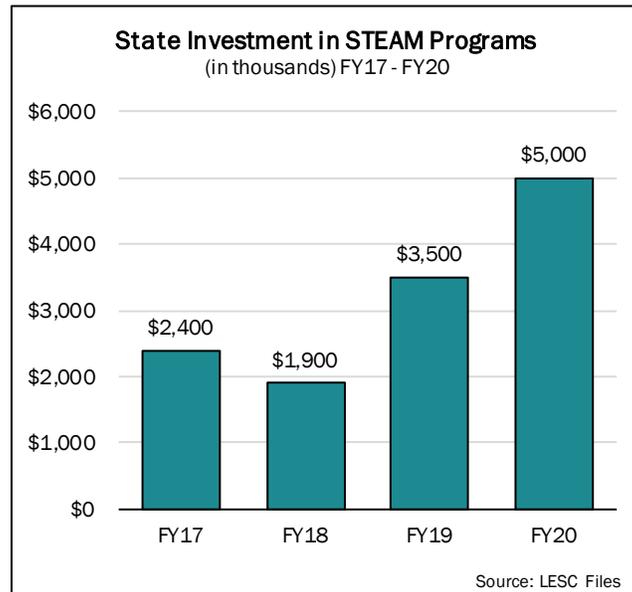
The bill appropriates \$600 thousand from the general fund to PED for expenditure in FY21 through FY25. Any unexpended or unencumbered balance remaining at the end of FY26 shall revert to the general fund.

**SUBSTANTIVE ISSUES**

Despite significant investment in science, technology, engineering, arts, and mathematics (STEAM) programs, statewide science proficiency rates have decreased 5 percentage points 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. The House Appropriations and Finance Committee Substitute for House Bills 2 and 3 includes \$5 million for PED's STEAM initiative. 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. 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. PED should ensure the early physics education pilot project makes provisions for professional development that includes these critical elements.

### ADMINISTRATIVE IMPLICATIONS

SB155 would require PED to design and implement an early physics pilot project that satisfies legislative intent. The language of SB155 suggests the bill would require PED to establish reporting requirements for participating school districts and charter schools in order to evaluate the impact of early physics education on academic performance and postsecondary outcomes. PED would also need to develop an award methodology for the appropriation included in SB155.

### OTHER SIGNIFICANT ISSUES

To be effective, the early physics pilot project should include age-appropriate science curricula, high quality instructional materials, and strong professional development for teachers. 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 12<sup>th</sup> 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 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 SB42, Pilot Project for early Physics Education, which establishes a five-year early physics education pilot project to serve students in sixth, seventh, and eighth grades, creates an early physics education fund, and appropriates \$600 thousand from the general fund to the early physics education fund.

### **SOURCES OF INFORMATION**

- LESC Files
- Public Education Department (PED)

**NAK/tb/mc/sgs**