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SENATE BILL NO. 239

Offered January 12, 2022

Prefiled January 10, 2022

A BILL to amend and reenact §§ 22.1-253.13:1 and 22.1-367 of the Code of Virginia, relating to STEM+C; Virginia STEM Education Advisory Board.

Patron—Hashmi

Referred to Committee on Education and Health

Be it enacted by the General Assembly of Virginia:

1. That §§ 22.1-253.13:1 and 22.1-367 of the Code of Virginia are amended and reenacted as follows:

§ 22.1-253.13:1. Standard 1. Instructional programs supporting the Standards of Learning and other educational objectives.

A. The General Assembly and the Board of Education believe that the fundamental goal of the public schools of the Commonwealth must be to enable each student to develop the skills that are necessary for success in school, preparation for life, and reaching their full potential. The General Assembly and the Board of Education find that the quality of education is dependent upon the provision of (i) the appropriate working environment, benefits, and salaries necessary to ensure the availability of high-quality instructional personnel; (ii) the appropriate learning environment designed to promote student achievement; (iii) quality instruction that enables each student to become a productive and educated citizen of Virginia and the United States of America; and (iv) the adequate commitment of other resources. In keeping with this goal, the General Assembly shall provide for the support of public education as set forth in Article VIII, Section 1 of the Constitution of Virginia.

B. The Board of Education shall establish educational objectives known as the Standards of Learning, which shall form the core of Virginia's educational program, and other educational objectives, which together are designed to ensure the development of the skills that are necessary for success in school and for preparation for life in the years beyond. At a minimum, the Board shall establish Standards of Learning for English, mathematics, science, and history and social science. The Standards of Learning shall not be construed to be regulations as defined in § 2.2-4001.

The Board shall seek to ensure that the Standards of Learning are consistent with a high-quality foundation educational program. The Standards of Learning shall include, but not be limited to, the basic skills of communication (listening, speaking, reading, and writing); computation and critical reasoning, including problem solving and decision making; proficiency in the use of computers and related technology; computer science and computational thinking, including computer coding; and the skills to manage personal finances and to make sound financial decisions; and science, technology, engineering, mathematics and computing (STEM+C), which includes real-world, interdisciplinary, and computational instruction and preparation of students in STEM+C.

The English Standards of Learning for reading in kindergarten through grade three shall be based on components of effective reading instruction, to include, at a minimum, phonemic awareness, systematic phonics, fluency, vocabulary development, and text comprehension.

The Standards of Learning in all subject areas shall be subject to regular review and revision to maintain rigor and to reflect a balance between content knowledge and the application of knowledge in preparation for eventual employment and lifelong learning. The Board of Education shall establish a regular schedule, in a manner it deems appropriate, for the review, and revision as may be necessary, of the Standards of Learning in all subject areas. Such review of each subject area shall occur at least once every seven years. Nothing in this section shall be construed to prohibit the Board from conducting such review and revision on a more frequent basis.

To provide appropriate opportunity for input from the general public, teachers, and local school boards, the Board of Education shall conduct public hearings prior to establishing revised Standards of Learning. Thirty days prior to conducting such hearings, the Board shall give notice of the date, time, and place of the hearings to all local school boards and any other persons requesting to be notified of the hearings and publish notice of its intention to revise the Standards of Learning in the Virginia Register of Regulations. Interested parties shall be given reasonable opportunity to be heard and present information prior to final adoption of any revisions of the Standards of Learning.

In addition, the Department of Education shall make available and maintain a website, either separately or through an existing website utilized by the Department of Education, enabling public elementary, middle, and high school educators to submit recommendations for improvements relating to

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59 the Standards of Learning, when under review by the Board according to its established schedule, and
60 related assessments required by the Standards of Quality pursuant to this chapter. Such website shall
61 facilitate the submission of recommendations by educators.

62 School boards shall implement the Standards of Learning or objectives specifically designed for their
63 school divisions that are equivalent to or exceed the Board's requirements. Students shall be expected to
64 achieve the educational objectives established by the school division at appropriate age or grade levels.
65 The curriculum adopted by the local school division shall be aligned to the Standards of Learning.

66 The Board of Education shall include in the Standards of Learning for history and social science the
67 study of contributions to society of diverse people. For the purposes of this subsection, "diverse"
68 includes consideration of disability, ethnicity, race, and gender.

69 The Board of Education shall include in the Standards of Learning for health instruction in
70 emergency first aid, cardiopulmonary resuscitation, and the use of an automated external defibrillator,
71 including hands-on practice of the skills necessary to perform cardiopulmonary resuscitation. Such
72 instruction shall be based on the current national evidence-based emergency cardiovascular care
73 guidelines for cardiopulmonary resuscitation and the use of an automated external defibrillator, such as a
74 program developed by the American Heart Association or the American Red Cross. No teacher who is
75 in compliance with subdivision D 3 of § 22.1-298.1 shall be required to be certified as a trainer of
76 cardiopulmonary resuscitation to provide instruction for non-certification.

77 With such funds as are made available for this purpose, the Board shall regularly review and revise
78 the competencies for career and technical education programs to require the full integration of English,
79 mathematics, science, and history and social science Standards of Learning. Career and technical
80 education programs shall be aligned with industry and professional standard certifications, where they
81 exist.

82 The Board shall establish content standards and curriculum guidelines for courses in career
83 investigation in elementary school, middle school, and high school. Each school board shall (i) require
84 each middle school student to take at least one course in career investigation or (ii) select an alternate
85 means of delivering the career investigation course to each middle school student, provided that such
86 alternative is equivalent in content and rigor and provides the foundation for such students to develop
87 their academic and career plans. Any school board may require (a) such courses in career investigation
88 at the high school level as it deems appropriate, subject to Board approval as required in subsection A
89 of § 22.1-253.13:4, and (b) such courses in career investigation at the elementary school level as it
90 deems appropriate. The Board shall develop and disseminate to each school board career investigation
91 resource materials that are designed to ensure that students have the ability to further explore interest in
92 career and technical education opportunities in middle and high school. In developing such resource
93 materials, the Board shall consult with representatives of career and technical education, industry, skilled
94 trade associations, chambers of commerce or similar organizations, and contractor organizations.

95 C. Local school boards shall develop and implement a program of instruction for grades K through
96 12 that is aligned to the Standards of Learning and meets or exceeds the requirements of the Board of
97 Education. The program of instruction shall emphasize reading, writing, speaking, mathematical concepts
98 and computations, proficiency in the use of computers and related technology, computer science and
99 computational thinking, including computer coding, and scientific concepts and processes; essential skills
100 and concepts of citizenship, including knowledge of Virginia history and world and United States
101 history, economics, government, foreign languages, international cultures, health and physical education,
102 environmental issues, and geography necessary for responsible participation in American society and in
103 the international community; fine arts, which may include, but need not be limited to, music and art,
104 and practical arts; knowledge and skills needed to qualify for further education, gainful employment, or
105 training in a career or technical field; and development of the ability to apply such skills and knowledge
106 in preparation for eventual employment and lifelong learning and to achieve economic self-sufficiency.

107 Local school boards shall also develop and implement programs of prevention, intervention, or
108 remediation for students who are educationally at risk including, but not limited to, those who fail to
109 achieve a passing score on any Standards of Learning assessment in grades three through eight or who
110 fail an end-of-course test required for the award of a verified unit of credit. Such programs shall include
111 components that are research-based.

112 Any student who achieves a passing score on one or more, but not all, of the Standards of Learning
113 assessments for the relevant grade level in grades three through eight may be required to attend a
114 remediation program.

115 Any student who fails to achieve a passing score on all of the Standards of Learning assessments for
116 the relevant grade level in grades three through eight or who fails an end-of-course test required for the
117 award of a verified unit of credit shall be required to attend a remediation program or to participate in
118 another form of remediation. Division superintendents shall require such students to take special
119 programs of prevention, intervention, or remediation, which may include attendance in public summer
120 school programs, in accordance with clause (ii) of subsection A of § 22.1-254 and § 22.1-254.01.

Remediation programs shall include, when applicable, a procedure for early identification of students who are at risk of failing the Standards of Learning assessments in grades three through eight or who fail an end-of-course test required for the award of a verified unit of credit. Such programs may also include summer school for all elementary and middle school grades and for all high school academic courses, as defined by regulations promulgated by the Board of Education, or other forms of remediation. Summer school remediation programs or other forms of remediation shall be chosen by the division superintendent to be appropriate to the academic needs of the student. Students who are required to attend such summer school programs or to participate in another form of remediation shall not be charged tuition by the school division.

The requirement for remediation may, however, be satisfied by the student's attendance in a program of prevention, intervention or remediation that has been selected by his parent, in consultation with the division superintendent or his designee, and is either (i) conducted by an accredited private school or (ii) a special program that has been determined to be comparable to the required public school remediation program by the division superintendent. The costs of such private school remediation program or other special remediation program shall be borne by the student's parent.

The Board of Education shall establish standards for full funding of summer remedial programs that shall include, but not be limited to, the minimum number of instructional hours or the equivalent thereof required for full funding and an assessment system designed to evaluate program effectiveness. Based on the number of students attending and the Commonwealth's share of the per pupil instructional costs, state funds shall be provided for the full cost of summer and other remediation programs as set forth in the appropriation act, provided such programs comply with such standards as shall be established by the Board, pursuant to § 22.1-199.2.

D. Local school boards shall also implement the following:

1. Programs in grades K through three that emphasize developmentally appropriate learning to enhance success.

2. Programs based on prevention, intervention, or remediation designed to increase the number of students who earn a high school diploma and to prevent students from dropping out of school. Such programs shall include components that are research-based.

3. Career and technical education programs incorporated into the K through 12 curricula that include:

a. Knowledge of careers and all types of employment opportunities, including, but not limited to, apprenticeships, entrepreneurship and small business ownership, the military, and the teaching profession, and emphasize the advantages of completing school with marketable skills;

b. Career exploration opportunities in the middle school grades;

c. Competency-based career and technical education programs that integrate academic outcomes, career guidance, and job-seeking skills for all secondary students. Programs shall be based upon labor market needs and student interest. Career guidance shall include counseling about available employment opportunities and placement services for students exiting school. Each school board shall develop and implement a plan to ensure compliance with the provisions of this subdivision. Such plan shall be developed with the input of area business and industry representatives and local comprehensive community colleges and shall be submitted to the Superintendent of Public Instruction in accordance with the timelines established by federal law;

d. Annual notice on its website to enrolled high school students and their parents of (i) the availability of the postsecondary education and employment data published by the State Council of Higher Education on its website pursuant to § 23.1-204.1 and (ii) the opportunity for such students to obtain a nationally recognized career readiness certificate at a local public high school, comprehensive community college, or workforce center; and

e. As part of each student's academic and career plan, a list of (i) the top 100 professions in the Commonwealth by median pay and the education, training, and skills required for each such profession and (ii) the top 10 degree programs at institutions of higher education in the Commonwealth by median pay of program graduates. The Department of Education shall annually compile such lists and provide them to each local school board.

4. Educational objectives in middle and high school that emphasize economic education and financial literacy pursuant to § 22.1-200.03.

5. Early identification of students with disabilities and enrollment of such students in appropriate instructional programs consistent with state and federal law.

6. Early identification of gifted students and enrollment of such students in appropriately differentiated instructional programs.

7. Educational alternatives for students whose needs are not met in programs prescribed elsewhere in these standards. Such students shall be counted in average daily membership (ADM) in accordance with the regulations of the Board of Education.

8. Adult education programs for individuals functioning below the high school completion level.

182 Such programs may be conducted by the school board as the primary agency or through a collaborative
183 arrangement between the school board and other agencies.

184 9. A plan to make achievements for students who are educationally at risk a divisionwide priority
185 that shall include procedures for measuring the progress of such students.

186 10. An agreement for postsecondary degree attainment with a comprehensive community college in
187 the Commonwealth specifying the options for students to complete an associate degree or a one-year
188 Uniform Certificate of General Studies from a comprehensive community college concurrent with a high
189 school diploma. Such agreement shall specify the credit available for dual enrollment courses and
190 Advanced Placement courses with qualifying exam scores of three or higher.

191 11. A plan to notify students and their parents of the availability of dual enrollment and advanced
192 placement classes; career and technical education programs, including internships, externships,
193 apprenticeships, credentialing programs, certification programs, licensure programs, and other work-based
194 learning experiences; the International Baccalaureate Program and Academic Year Governor's School
195 Programs; the qualifications for enrolling in such classes, programs, and experiences; and the availability
196 of financial assistance to low-income and needy students to take the advanced placement and
197 International Baccalaureate examinations. This plan shall include notification to students and parents of
198 the agreement with a comprehensive community college in the Commonwealth to enable students to
199 complete an associate degree or a one-year Uniform Certificate of General Studies concurrent with a
200 high school diploma.

201 12. Identification of students with limited English proficiency and enrollment of such students in
202 appropriate instructional programs, which programs may include dual language programs whereby such
203 students receive instruction in English and in a second language.

204 13. Early identification, diagnosis, and assistance for students with reading and mathematics problems
205 and provision of instructional strategies and reading and mathematics practices that benefit the
206 development of reading and mathematics skills for all students.

207 Local school divisions shall provide reading intervention services to students in kindergarten through
208 grade three who demonstrate deficiencies based on their individual performance on the Standards of
209 Learning reading test or any reading diagnostic test that meets criteria established by the Department of
210 Education. Local school divisions shall report the results of the diagnostic tests to the Department of
211 Education on an annual basis, at a time to be determined by the Superintendent of Public Instruction.
212 Such reading intervention services shall be evidence-based, including services that are grounded in the
213 science of reading, and include (i) the components of effective reading instruction and (ii) explicit,
214 systematic, sequential, and cumulative instruction, to include phonemic awareness, systematic phonics,
215 fluency, vocabulary development, and text comprehension as appropriate based on the student's
216 demonstrated reading deficiencies. The parent of each student who receives such reading intervention
217 services shall be notified before the services begin in accordance with the provisions of § 22.1-215.2,
218 and the progress of each such student shall be monitored throughout the provision of services. Each
219 student who receives such reading intervention services shall be assessed again at the end of that school
220 year. The local school division, in its discretion, shall provide such reading intervention services prior to
221 promoting a student from grade three to grade four. Such reading intervention services may be
222 administered through the use of reading specialists; trained aides; trained volunteers under the
223 supervision of a certified teacher; computer-based reading tutorial programs; aides to instruct in-class
224 groups while the teacher provides direct instruction to the students who need extra assistance; and
225 extended instructional time in the school day or school year for these students. Funds appropriated for
226 prevention, intervention, and remediation; summer school remediation; at-risk; or early intervention
227 reading may be used to meet the requirements of this subdivision.

228 Local school divisions shall provide algebra readiness intervention services to students in grades six
229 through nine who are at risk of failing the Algebra I end-of-course test, as demonstrated by their
230 individual performance on any diagnostic test that has been approved by the Department of Education.
231 Local school divisions shall report the results of the diagnostic tests to the Department of Education on
232 an annual basis, at a time to be determined by the Superintendent of Public Instruction. Each student
233 who receives algebra readiness intervention services will be assessed again at the end of that school
234 year. Funds appropriated for prevention, intervention, and remediation; summer school remediation;
235 at-risk; or algebra readiness intervention services may be used to meet the requirements of this
236 subdivision.

237 As used in this subdivision:

238 "Science of reading" means the study of the relationship between cognitive science and educational
239 outcomes.

240 14. Incorporation of art, music, and physical education as a part of the instructional program at the
241 elementary school level.

242 15. A program of physical activity available to all students in grades kindergarten through five
243 consisting of at least 20 minutes per day or an average of 100 minutes per week during the regular

school year and available to all students in grades six through 12 with a goal of at least 150 minutes per week on average during the regular school year. Such program may include any combination of (i) physical education classes, (ii) extracurricular athletics, (iii) recess, or (iv) other programs and physical activities deemed appropriate by the local school board. Each local school board shall implement such program during the regular school year.

16. A program of student services for kindergarten through grade 12 that shall be designed to aid students in their educational, social, and career development.

17. The collection and analysis of data and the use of the results to evaluate and make decisions about the instructional program.

18. A program of instruction in the high school Virginia and U.S. Government course on all information and concepts contained in the civics portion of the U.S. Naturalization Test.

E. From such funds as may be appropriated or otherwise received for such purpose, there shall be established within the Department of Education a unit to (i) conduct evaluative studies; (ii) provide the resources and technical assistance to increase the capacity for school divisions to deliver quality instruction; and (iii) assist school divisions in implementing those programs and practices that will enhance pupil academic performance and improve family and community involvement in the public schools. Such unit shall identify and analyze effective instructional programs and practices and professional development initiatives; evaluate the success of programs encouraging parental and family involvement; assess changes in student outcomes prompted by family involvement; and collect and disseminate among school divisions information regarding effective instructional programs and practices, initiatives promoting family and community involvement, and potential funding and support sources. Such unit may also provide resources supporting professional development for administrators and teachers. In providing such information, resources, and other services to school divisions, the unit shall give priority to those divisions demonstrating a less than 70 percent passing rate on the Standards of Learning assessments.

F. Each local school board may enter into agreements for postsecondary course credit, credential, certification, or license attainment, hereinafter referred to as College and Career Access Pathways Partnerships (Partnerships), with comprehensive community colleges or other public institutions of higher education or educational institutions established pursuant to Title 23.1 that offer a career and technical education curriculum. Such Partnerships shall (i) specify the options for students to take courses as part of the career and technical education curriculum that lead to course credit or an industry-recognized credential, certification, or license concurrent with a high school diploma; (ii) specify the credit, credentials, certifications, or licenses available for such courses; and (iii) specify available options for students to participate in pre-apprenticeship and apprenticeship programs at comprehensive community colleges concurrent with the pursuit of a high school diploma and receive college credit and high school credit for successful completion of any such program.

§ 22.1-367. Powers and duties of the Board; acceptance of gifts and grants.

A. The Virginia STEM Education Advisory Board shall have the following powers and duties:

1. Create a unified vision regarding STEM education initiatives, language, and measures of success to promote a culture of collaboration for STEM programming in the Commonwealth.

2. Develop the infrastructure for creating STEM Regional Hubs and naming STEM Champions in communities across the Commonwealth to facilitate partnerships between organizations across regions and populations that will lead to increased cross-sector opportunities.

3. Advance and disseminate STEM curricular and professional development resources for formal and informal education.

4. Submit an annual report to the Governor and the General Assembly for publication as a report document as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents and reports. The chairman shall submit to the Governor and the General Assembly an annual executive summary of the interim activity and work of the Board no later than the first day of each regular session of the General Assembly. The executive summary shall be submitted for publication as a report document as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents and reports and shall be posted on the General Assembly's website.

5. Develop and submit to the Board of Education a rubric that shall be used by the Board of Education in setting out what factors permit a school to be defined as a STEM school. Such rubric shall help define the expectations for a school board that claims a title of a STEM school by how it implements STEM opportunities and whether all students have opportunities to engage in STEM programming.

6. Develop and submit to the Board of Education recommendations for the Board to create a measurement for quality of STEM programming in general education instruction. Such recommendations shall define expectations in STEM programming and limit the wide range of programs self-identifying as

305 *STEM experiences that are not meeting the vision of STEM education initiatives, language, and*
306 *measures of success described in subdivision 1.*

307 *7. Draft and report to the Department proposed common language and terminology that better*
308 *defines the basic literacies employed in science, technology, engineering, mathematics and computing*
309 *(STEM+C) as methodological approaches to solving universal human challenges and, generalizable and*
310 *transferable literacy toward the application of skills and content needed to solve those challenges. This*
311 *explicit focus on computational thinking, scientific method, and associated cognitive skills as*
312 *building-block literacy concepts that have application across all disciplines is intended to shift the*
313 *instructional emphasis to application through integration of these concepts, for the purpose of examining*
314 *and solving real-world and relevant challenges. This adaptation moves beyond content, helps solidify*
315 *STEM+C as a practice of application, and shall apply to both academic and career and technical*
316 *education content and curricula. Based on this proposed common language and terminology, the*
317 *Department of Education shall recommend finalized language to the Board of Education. Once such*
318 *language is adopted by the Board of Education, it shall be added and addressed in the Standards of*
319 *Learning, Standards of Quality, and Standards of Accreditation during the regular review and revision*
320 *process for each.*

321 *B. The Board may apply for, accept, and expend gifts, grants, or donations from public or private*
322 *sources to enable it to carry out its objectives.*

323 **2. That the Department of Education shall recommend finalized language to the Board of**
324 **Education pursuant to subdivision A 7 of § 22.1-367 of the Code of Virginia, as amended by this**
325 **act, no later than December 1, 2022, and shall ensure that its recommendations apply to both**
326 **academic and career and technical education content and curricula.**