LEGISLATIVE REPORT

2022

The Virginia STEM Education Advisory Board (2021 HB#2058) has completed its first full year of work. Their work aimed to ensure all youth in Virginia have access to quality STEM programming and can more clearly identify their pathways into the ever-evolving STEM workforce. The work done by this 16-member Board has grown since its initiation. The Board has worked to meet the needs of a new administration while striving to meet their original legislation, which was to create a common language in STEM and begin identifying the structure by which we can build a STEM hub network. The Board met five times (four in person and one virtual) in 2022. Five workgroups were created and these groups met in over a dozen virtual work group meetings to help move STEM education forward in the Commonwealth.

This report will highlight four work groups and their initiatives. Additional details and workgroup research can be found in the appendices.

Common Language/Definition Work Group

The Board has worked through a series of listening sessions and researched a variety of national, other state, and even regional definitions of STEM to help create a universal language that the greater Virginia community can use. The Board approved the following definition on June 30, 2022:

> *Science, Technology, Engineering and Mathematics (STEM) education applies discipline-specific content-learning experiences where academic and technical disciplines intersect in complex relationships. Students engage in the design thinking process to create, and communicate solutions to a spectrum of universal human challenges. STEM literacy prepares all learners to participate in a vibrant and thriving Commonwealth of Virginia, and contribute to a STEM-enriched workforce.*

This definition conveys a basic, standard definition to any audience. The Board is developing metrics to help school settings, community partners, and post-secondary or funders better interpret how this definition meets their needs and interests.

Occupations Work Group in partnership with the Virginia Economic Development Partnership

The Virginia STEM Board's efforts build on some of the original and important research conducted by the Virginia STEM Commission that preceded it. The Commission identified that many agencies and reports were inconsistent regarding what should count as STEM occupations.

In an effort to give Virginia policymakers and STEM educators a clearer picture of STEM workforce need in Virginia, the Occupations Work Group collaborated with VEDP's newly created Office of Education Economics (VOEE) to provide a better snapshot of STEM occupations. This involved expanding beyond the narrow Bureau of Labor Statistics (BLS) categorizing of STEM occupations to draw in National Science Foundation career categories, as well as a broader examination that spans beyond jobs requiring 4-year bachelor's degree or greater. Under the prior methodology, which relied almost exclusively on BLS data, whole categories of STEM careers, including healthcare, agriculture and even secondary and post-secondary STEM educators/researchers, among others, were excluded.

The resulting report provides a more consistent approach to addressing STEM and STEM workforce. It will also help Virginia better understand how policy and funding may influence the growth of specific workforce needs across the State. Based on the report's findings, the STEM Workforce Profile represents a 375% increase in the number of occupations formally recognized as using a STEM skillset. This expanded definition now represents approximately 43% of the total occupations defined in the BLS SOC taxonomy, rather than the previous 9%.

As follow-up to this completed work, VOEE staff and the STEM Board's Occupations Work Group have mutually agreed to continue this work through a more in-depth look at the list of STEM occupations to better identify the skills and levels of mastery required to declare an occupation as STEM-related or not, rather than look at the educational attainment.

This collaborative effort has also pulled in perspectives and voices from other outside groups, considering the State Council of Higher Education of Virginia (SCHEV) and Career and Technical Education (CTE) points of view.

STEM Metrics Work Group

In order to add more support and clarity to the newly created state STEM definition and to help support schools, out-of-school programs, and STEM educators with implementing high quality STEM education, the Board seated a Metrics Work Group. Development of standard metrics will allow for these programs to rate themselves around core principles and move towards continued improvement consistent with the Commonwealth's goal of promoting consistent and quality STEM educational experiences for students.

The group began with researching similar rubrics from other states. The group then defined the key components that the metric required for inclusion for clarity and to meet Virginia's unique goals. The STEM Metrics Work Group developed a draft that will be piloted by STEM stakeholders and educators being identified across the state beginning in January 2023. The group plans to review the feedback and vote on the recommended metric document at its April 2023 meeting.

Summit/Forum/Conference Work Group

Towards a goal of maintaining momentum and cohesion of vision around STEM education in the Commonwealth, and to better familiarize stakeholders and the public at large with its work, the Board seated a Summit Work Group to develop strategies, including a statewide summit, to connect some of the various STEM stakeholders and bring their perspectives to the work led by the Board. Currently, the Summit Work Group is considering a summer 2023 event that will pull together various business leaders with educational agencies to ensure we create a more transparent, real-time look at STEM jobs available and necessary educational pathways towards those goals. The Board also looks to develop, or to assist in better promoting existing work-based learning opportunities towards a goal of better connecting education to the workforce, encouraging youth to explore and appreciate STEM career options, and to help those students build relationships within their localities.

Virginia STEM Education Advisory Board Representation

- **Chair:** Amy Sabarre, Director of STEM Education PK-12 and Science Coordinator PK-5, Harrisonburg City Public Schools
- **Vice-Chair:** Casey Roberts, Executive Director, New Horizons Regional Education Centers
- **Staff:** Chuck English, Virginia STEM Coordinator, Science Museum of Virginia

16 Board Members

10 Citizen Members:

- Gary Artybridge Jr.
- Chris Dovi
- Casey Roberts (Vice-Chair)
- Amy Sabarre (Chair)
- Dr. Padmanabhan Seshaiyer
- Dr. Susheela Shanta
- Zaina Tarafdar
- Amy White
- Edward Monroe
- Victoria Chuah

6 State Members:

- Virginia Department of Education: Dr. Brendon Albon
- Science Museum of Virginia: Rich Conti
- State Council of Higher Education for Virginia: Emily Salmon
- Secretary of Labor Office
- Secretary of Education Office
- Chief Diversity, Opportunity, and Inclusion Officer

Appendix A

Future Budgetary Needs

1. STEM Occupations Continued Research/Work

A research team will need to dig into various STEM-related occupations to more clearly identify what skills we should recognize as STEM and to what level of mastery before a particular career is declared a STEM Occupation. This work will help clarify the rationale behind the selections VEDP and the Board made regarding occupational codes.

2. STEM Metrics

Once the drafts are finalized, STEM Metrics must be piloted with program observers and educators. This testing will help refine how to best use these tools to help improve STEM programming options in numerous educational settings.

3. STEM Summit

The STEM Summit will need to secure a location and the funds for drinks/food for an audience of a couple of hundred attendees. These attendees will be part of the Board's Inaugural STEM Summit designed to align the workforce and education efforts.

4. STEM Board and Coordinator Memberships and Travel

The Virginia STEM Education Advisory Board and the Coordinator belong to several national organizations and must pay membership fees. The Board and Coordinator also need funds to travel to the quarterly Board meetings and various conferences to disseminate the success of Virginia STEM. These presentations and speaking engagements will help bring attention to the State's efforts and help highlight our work on a national stage. In-state travel funds will support the continuation of touring STEM programs that should be highlighted and shared with the administration.