

BOARD BRIEF

Date: April 12, 2024

BOARD INFORMATION: X

MEETING PREPARATION:

FROM: Carmen Sanders, Executive Director of Instructional Support
Julia Neuffer, STEM Coordinator/Elementary Math Instructional Specialist

THROUGH: Pierrette Finney, Ed.D., Chief Academic Officer
Melanie Kay-Wyatt, Ed.D., Superintendent of Schools

TO: The Honorable Michelle Rief, Chair, and
Members of the Alexandria City School Board

TOPIC: ACPS STEM Updates (Science, Math, Computer Science, Planetarium
Modernization and Learning Garden Upgrades)

ACPS 2025 STRATEGIC PLAN GOAL:

Goal 2: Instructional Excellence

Goal 4: Strategic Resource Allocation

SY 2023-2024 PRIORITY AREA:

Academic Achievement

Tier 1 Instruction: Alignment, Rigor, Engagement

FY 2024 BUDGET PRIORITY:

Building Upgrades

Textbooks

Technology Upgrades

Modernization

SUMMARY:

This board brief will provide highlights of some of the work of the Alexandria City Public Schools (ACPS) STEM team throughout the 2023-2024 school year.

DETAILS:

Mathematics Updates:

The Virginia Board of Education (VDOE) approved the 2023 Mathematics Standards of Learning on August 31, 2023. The foundation of the new standards is rooted in the Virginia Math Process Goals. The 2023 Mathematics Standards of Learning (SOL) represent "best in class" standards and comprise the mathematics content teachers in Virginia are expected to teach, and students are expected to learn. The 2023 Mathematics Standards of Learning will be fully implemented and tested during the 2024-2025 school year.

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Typically, adopting new standards includes a planning year to adjust resources and a crosswalk year to train educators before fully implementing and assessing the standards. The acceleration of the standards implementation timeline by VDOE reduces the time school divisions have to adjust curriculum, select resources, and provide professional development for a successful implementation of the 2023 Math SOLs. The newly approved, more rigorous mathematics standards, coupled with a shortened timeline for implementation, reduce the time available to adjust curriculum, select resources, and provide professional development for a successful implementation of the 2023 Math SOLs and may impact SOL scores.

In February, Alexandria City Public Schools began a Request for Proposal (RFP) for new high-quality instructional resources for elementary math to support the implementation of the new 2023 Mathematics SOLs. The RFP selection committee's recommendation will be brought to the School Board in May 2024. Secondary mathematics will begin an RFP process for new high-quality instructional resources during the 2024-2025 school year. Through the spring, summer, and beyond, there will be a focus on aligning and revising existing resources and developing resources aligned with the new standards.

Throughout the 2023-2024 school year, there has been a focus on professional development on the 2023 SOLs with school leaders and instructional coaches. There will be a continued focus on professional learning as we enter the summer and during future school years.

Science Updates:

New Textbook Implementation

This year, K-12 Science teachers were provided professional learning opportunities on all K-12 Science Textbook adopted materials during division professional development days. At the elementary level, all newly adopted textbook materials have been fully embedded within the ACPS curriculum courses in Canvas. As a next step, a team of elementary science leaders will develop a list of science materials for the customized kits that will be sent to schools next year. Work to fully embed textbook resources with the current curriculum continues at the secondary level.

New Science Standards to be approved in January 2025

January 2025 is the anticipated Virginia Board Of Education's (BOE) Approval of the 2025 Science Standards of Learning for 24 VDOE Science courses. The implementation deadline is scheduled to be released by VDOE in March.

Typically, adopting new standards includes a planning year to adjust resources and a crosswalk year to train educators before fully implementing and assessing the standards. During this time, ACPS must adjust the curriculum, identify and highlight appropriately aligned resources, and provide professional development to successfully implement the 2025 Science SOLs. Within the proposed timeline for the 2025 Science SOLs, the proposed updates will include adding Standards of Learning for eleven additional secondary courses, which will require the development of a new aligned curriculum for five secondary science courses in ACPS.

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The 2024 ACPS Science and Engineering Fair

On January 25, 2024, Alexandria City held its annual Science and Engineering Fair, which welcomed over two hundred student projects. Of these, sixty-five received recognition, and fifty-one were recommended to compete in the Regional Science Fair on March 5, 2024. This work was supported by over twenty-five teacher volunteers and ninety community members volunteering to judge. At the regional fair on March 5, 2024, forty-five ACPS projects received category awards.

Laboratory Safety

A team of division leaders and school-based staff are developing a Chemical Hygiene Safety Plan outlining laboratory safety procedures for staff and students in ACPS. In congruence with this, a yearly plan for safely removing laboratory chemical waste is being developed.

Micro:bit

This is the second year of fully implementing the Micro:bit project in Grade 5. ACPS Grade 5 students learn to code and use a micro:bit processor during ACPS-created science lessons in the K-5 Science curriculum. This year, an ACPS partner, Boolean Girls, received a grant from Amazon to provide students with a Microbit add-on kit, which enables students to code Microbits to interact with external components, such as motors. At the completion of the school year, all Grade 5 students will take home their micro:bit and extra components to extend their learning with coding beyond Grade 5. All Grade 5 teachers received training on how to teach with Microbits in the 2022-23 school year, and sixteen Grade 5 teachers opted to receive more in-depth training this year.

Solar Eclipse 2024

On April 8, 2024, North America will experience a solar eclipse. The eclipse will take place during dismissal time for most schools. While it is a wonderful time to connect learning to celestial events, it can pose a potential safety hazard for curious students who need to learn how to view such events properly. To ensure student safety, ACPS purchased a limited quantity of ISO-rated protective eclipse shades to make it possible to view the eclipse. Educators are also being provided with an Eclipse guide to engage students in this opportunity for an authentic learning experience.

Animals in the Science Classroom

This year, kindergarten classes were able to opt in to receiving chick eggs to hatch in the classroom. We plan to expand this program next school year in partnership with 4H. All Grade 2 classrooms will receive butterfly larvae so that students can watch them transform into butterflies in their classrooms.

Computer Science and STEM Updates:

We believe in Computer Science for all students because it promotes 21st-century skills while creating equitable access to experiences that prepare all students to contribute and engage in the process of addressing complex, open-ended problems in the society/community. Through our partnerships with Virginia Tech Innovation Campus and Amazon, ACPS has broadened experiences for our educators and students. Some of the 2023-2024 school year highlights

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include the ACPS Computer Science Team, Middle School Drone Summer Program, Middle School Drone Soccer Teams, and Student STEM Experiences at Building Momentum.

The ACPS Computer Science Team was created to support the integration of computer science standards with thoughtful use of technology in our classrooms. Twenty-three of our ACPS educators have participated in this year-long program. Virginia Tech Innovation Campus, Amazon, CodeVA, and Boot-Up supported this program.

The Middle School Drone summer program was hosted during the summer of 2023 in partnership with Virginia Tech Innovation Campus. Forty ACPS middle school students participated in the program, learning about drone technology, aviation careers, and the engineering design process. These students built and learned to fly drones and toured Aurora Flight Sciences in Manassas, VA, the Virginia Tech Campus, and Drone Park in Blacksburg, VA. This experience was expanded in the fall when students were invited to visit Noblis Labs in Reston, VA. The students participated in labs focused on autonomous systems, life sciences, innovation momentum, and forensics.

Virginia Tech Innovation Campus supported ACPS middle school teachers and students at GW and FCH to start U.S. Drone Soccer Teams. These students learned to build, program, and fly drones, and this sport teaches the technical aspects of unmanned aviation systems while keeping them interested through fast-paced team participation. The teams competed in the 2024 U.S. Drone Soccer District IV Championship on March 16, 2024. The Francis C. Hammond's team advanced to the 2024 National Drone Soccer Championship, which will be held in Alexandria, VA on April 27, 2024.

ACPS has also partnered with Amazon in the Community and Building Momentum to provide student experiences and integration in STEAM learning for ACPS 8th grade and STEM academy students this year. Students participated in field trips, including the robot obstacle course where students learned how to read wiring diagrams, assemble an Arduino-based robot, and code it to perform various tasks and build a tethered drone with a microcontroller where students delve into the intricacies of drones, starting with a detailed exploration of essential components such as propellers and motors.

Planetarium Modernization Updates:

The Planetarium at Alexandria City High School has welcomed students to learn about our celestial neighbors for decades. The current machine has been a fixture here since it was donated by the United States Army in 1985. Students from preschool through high school have benefitted from this resource with shows tailored and designed by planetarium teachers, specifically for their age group and coursework content.

In the spring of 2023, ACPS recognized the need to replace the planetarium projector system to ensure students and teachers will continue to benefit from it. The planetarium has been crucial in helping to review abstract content that students have struggled to understand in the traditional classroom setting. During the fall of 2023, Alexandria City Public Schools awarded a

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contract to SSIA and will work with this company to upgrade the ACPS planetarium projector system. The new digital projector will offer expanded opportunities for current users and increase opportunities for other subject areas to benefit from the resource. These opportunities will increase the number of students benefiting from the planetarium. More information will be provided once the new system is implemented.

Learning Garden Updates:

Since 1998, the ACPS School Gardens Program has fostered a love of learning by engaging students in hands-on learning experiences in our school gardens. Students from preschool through high school participate in lessons, exposing them to our natural world while also allowing them to deepen their understanding of curriculum concepts.

Post-pandemic, the School Gardens Program is making progress in revitalizing growing spaces and continuing to engage students in our school gardens. Students have learned about the plant life cycle and caring for plants by growing a variety of crops including beans, peppers, radishes, lettuce, and a variety of flowers. Students have also engaged in learning about soil health including learning about composting. In 2023, new garden spaces were established for preschool students at William Ramsay and the Early Childhood Center including a sensory garden and raised/elevated garden beds. In the spring of 2023, the Cora Kelly Community Garden opened for the first time post-pandemic offering Cora Kelly families, ACPS staff, and local residents growing space. The community garden was fully reserved before the season-opening in 2023 and is at capacity again for the 2024 growing season.

BACKGROUND:

This board brief provides the 2023-24 update from the Office of Instructional Support STEM team.

RECOMMENDATION:

The Superintendent recommends that the School Board review the information the ACPS STEM team provided.

IMPACT:

ACPS STEM initiatives have provided enhanced opportunities for students to explore and engage in authentic learning experiences in the related STEM fields. The focus of the STEM team will continue to be on providing meaningful aligned, engaging, and rigorous experiences.

REFERENCES:

231012_Board Brief_2023 Mathematics Standards of Learning_v1
231204_Board_Brief_2025_Science_Standards_of_Learning

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