



Teaching and Learning Report: Science

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late August

- late August



Student Performance Data

What does the data tell us?



How the MCA Test Changed

MCA-III OLD Assessment

- 2009 Science Standards
- 4 broad categories
 - Nature of Science & engineering
 - Physical Science
 - Earth & Space Science
 - Life Science
- Test largely focused on content knowledge and some inquiry skills

Primary Goal:
measure student learning of the MN Science Standards

One data point to be considered in context of the entire assessment system.

Administered:
Grades 5, 8, high school (when enrolled in Biology)

Results:
Not comparable

MCAI-V NEW Assessment

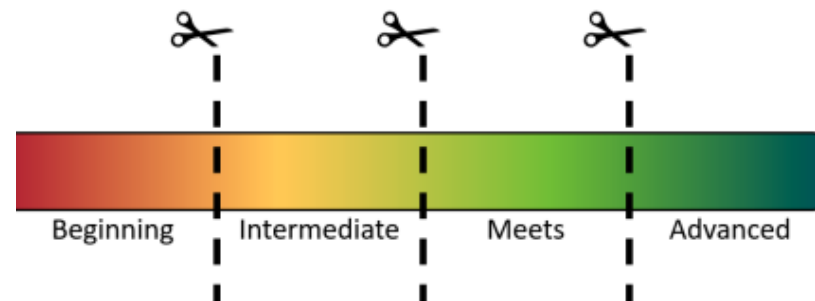
- 2019 Science Standards
- Three-Dimensional Science
 - Science & Engineering Practices
 - Disciplinary Core Ideas
 - Crosscutting Concepts
- Test questions are built around eral science phenomena (situations that require interpretation of data, models, etc.)

Performance Level Descriptors

MCA III



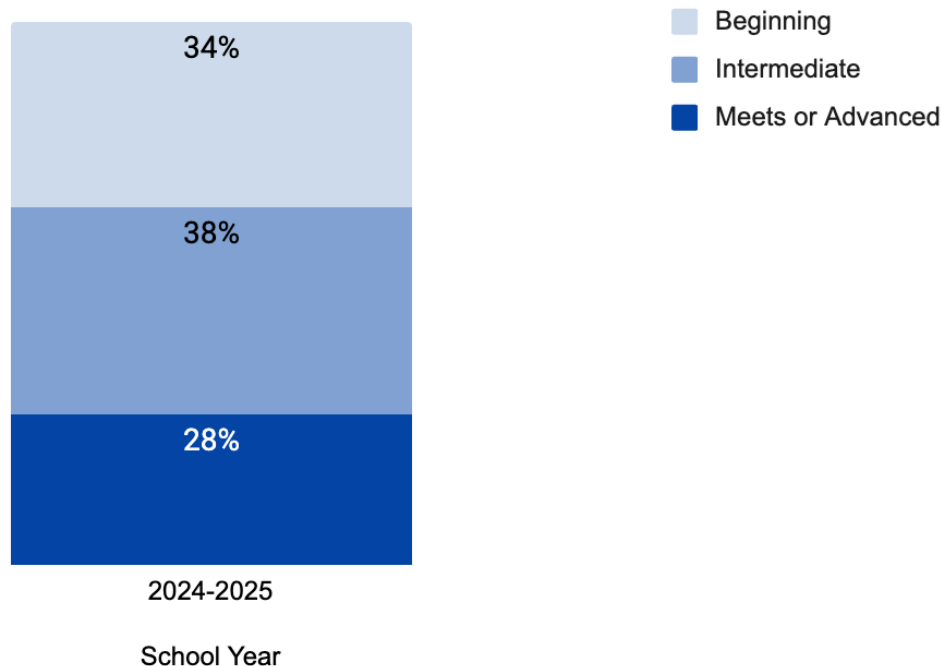
MCA IV



MCA Science Proficiency Rates: Grade 5



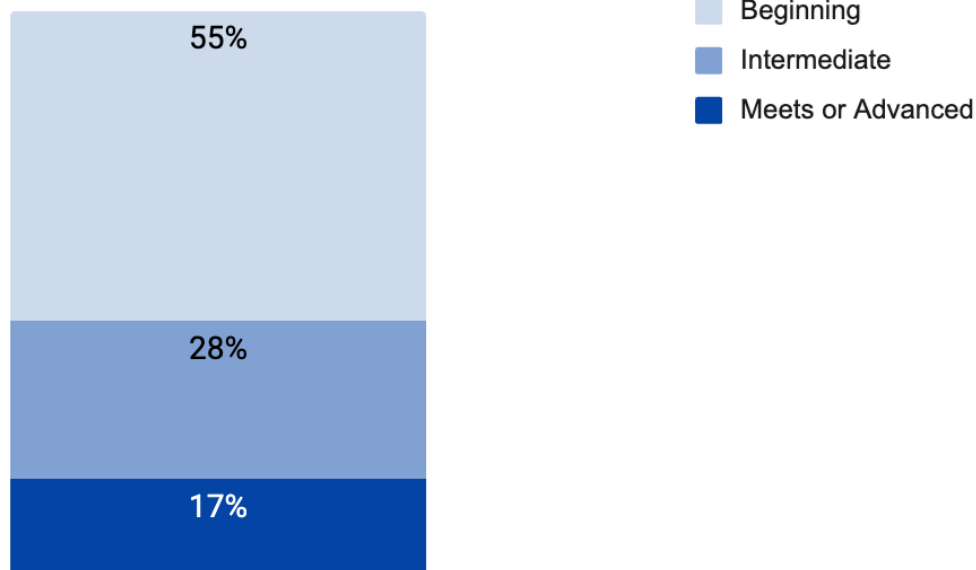
Science proficiency in grade 5 is 28% meets or advanced.



MCA Science Proficiency Rates: Grade 8



Science proficiency in grades 8 is 17% meets or advanced.



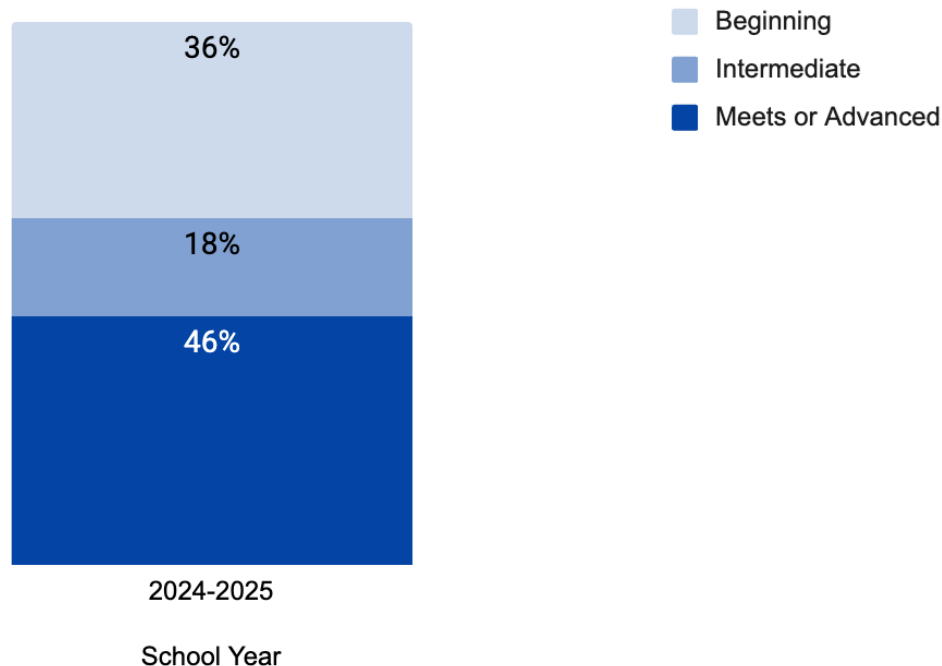
2024-2025

School Year

MCA Science Proficiency Rates: High School



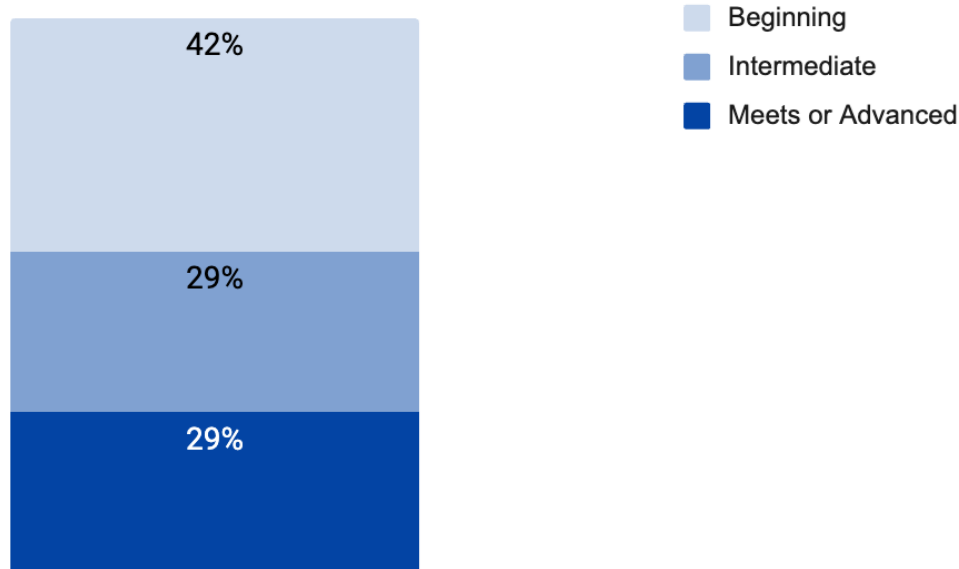
Science
proficiency for
students taking
Biology (typically
10th grade)



MCA Science Proficiency Rates: District-wide Grades 5,8 and High School



Science
proficiency
overall is 29%
Meets or
Advanced



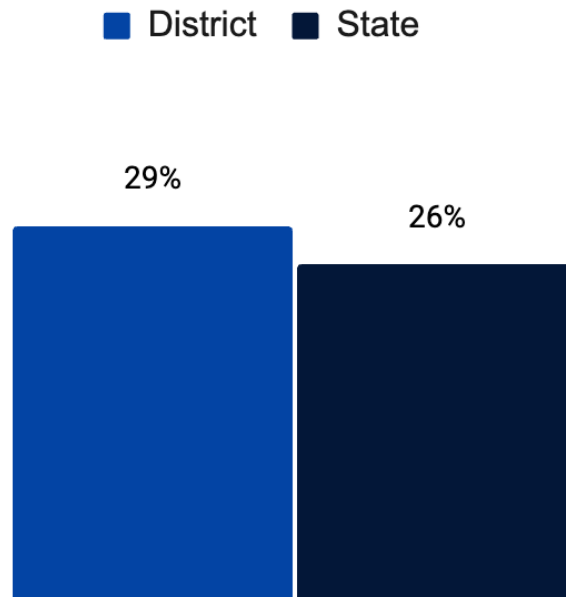
2024-2025

School Year

MCA: District and State Comparison

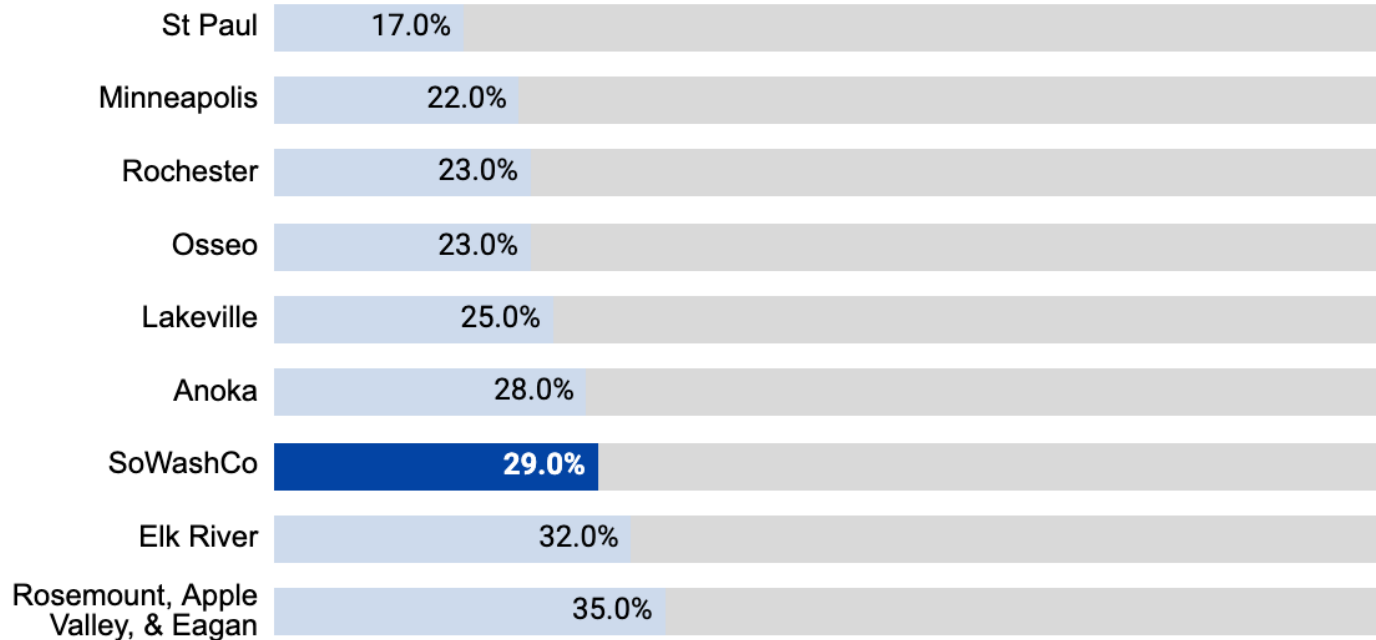


Science
proficiency
overall is 29%
Meets or
Advanced for
District and 26%
for State of
Minnesota



2025

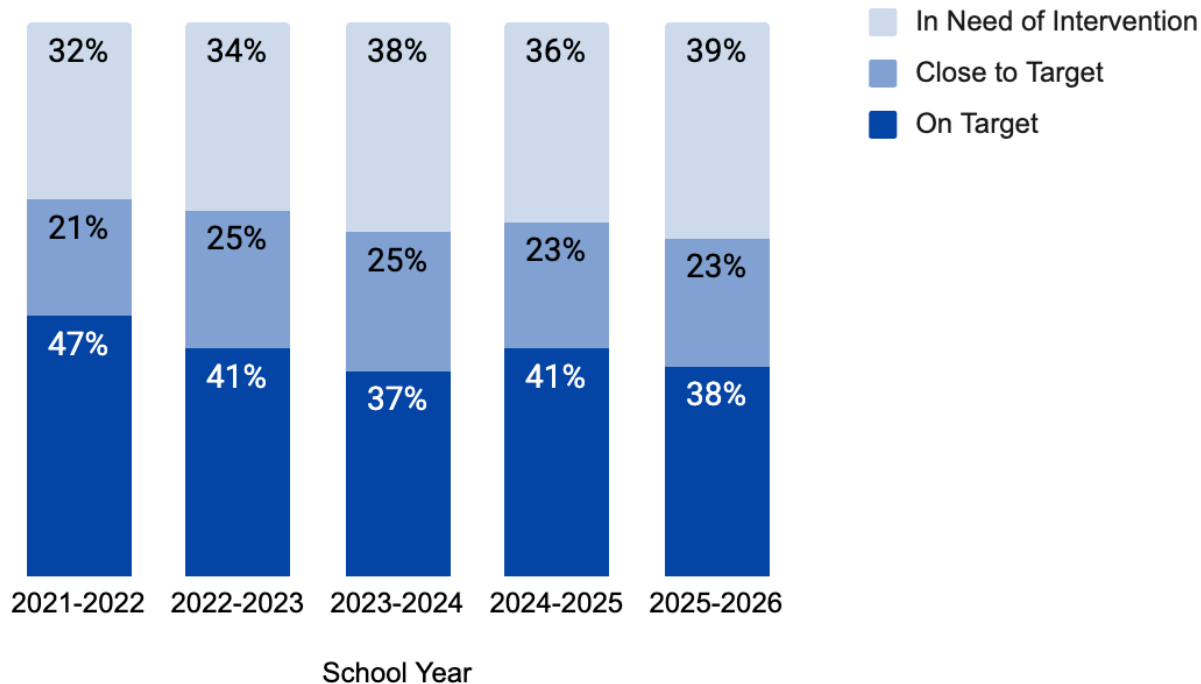
2024-25 MCA Science Proficiency Rates Similar Sized School Districts



PreACT Science Readiness Levels



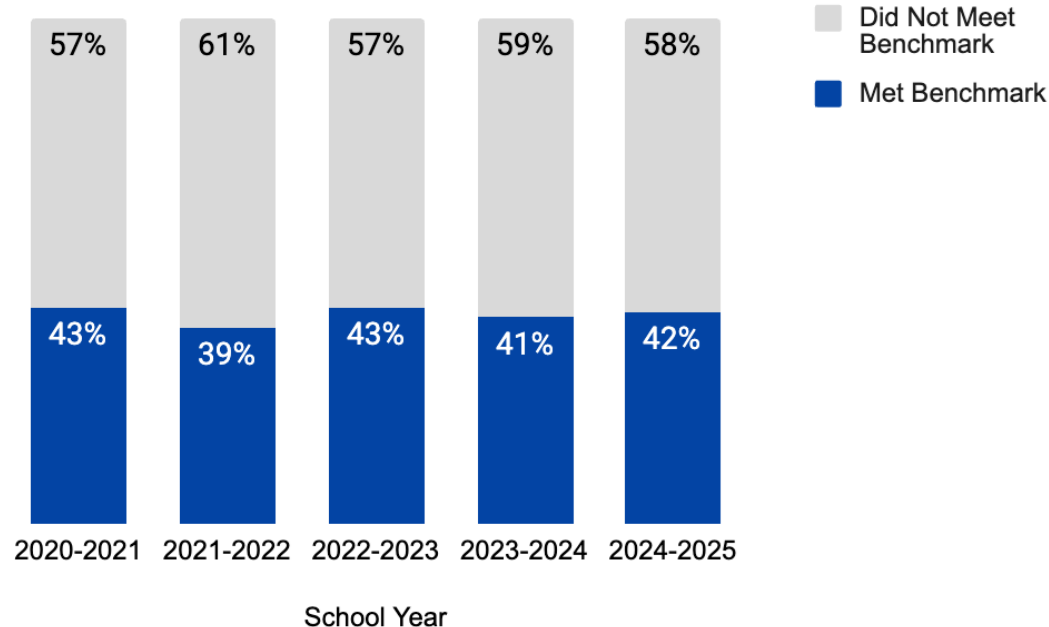
PreACT is a predictor of ACT performance.



11th Grade Students Meeting or Exceeding the ACT Science Benchmark of 23



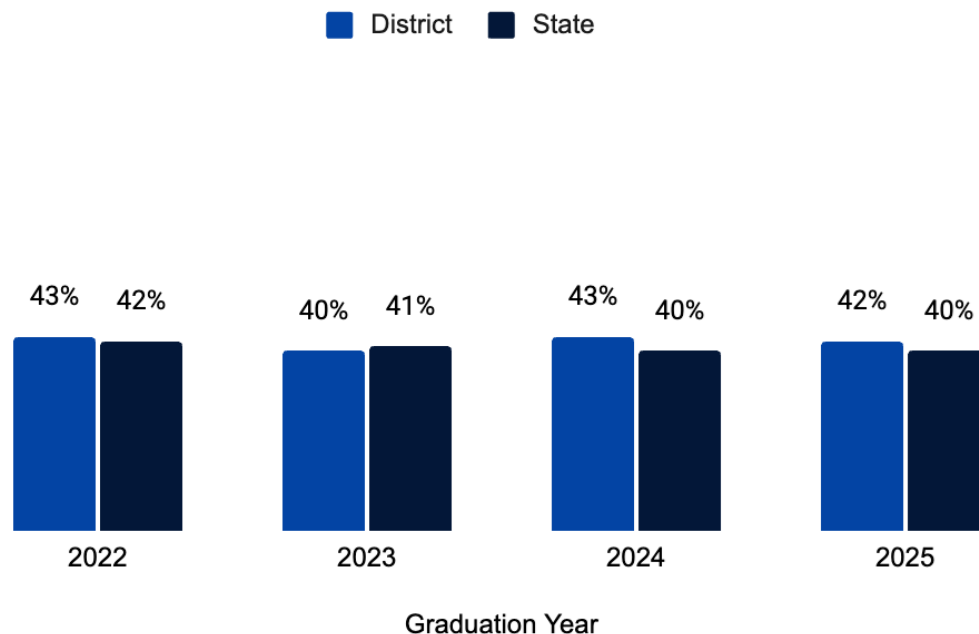
Meeting the Benchmark on the ACT indicates that students are well prepared for an entry level college, science course.



12th Grade Students Meeting or Exceeding ACT Science Benchmark of 23 compared to State



This graph shows how SoWashCo compares to the state on the ACT.



Secondary Science



Secondary Science Update



All Secondary required Science classes have fully implemented the new Minnesota Science Standards.

The required courses include:

- 6th grade Earth and Space Science
- 7th grade Life Science
- 8th grade Physical Science
- High School Earth and Space Science
- High School Biology
- High School Chemistry or High School Physics

A few photos:

Highlighting hands-on learning, activities and labs.

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Secondary Science Update



Students in SoWashCo Schools have a wide range of options beyond the required science courses – some can replace a required course and some extend learning beyond the required course.

Replacing or extending beyond Earth and Space Science:

- **Honors Earth and Space Science**
 - A deeper dive including greater mathematical rigor, modeling, more reading and writing. Connections to other disciplines are also explored.
- **Environmental Science**
 - Examines the implications of natural and human-influenced changes to the local, regional and global environments, and economics.

Secondary Science Update



Students in SoWashCo have a wide range of options beyond the required science courses – some can replace a required course and some extend learning beyond the required course.

Replacing or extending beyond Earth and Space Science:

- **AP Environmental Science**

- Rigorous examination of the complex concepts that impact the global ecosystem including species, environment, natural resources and sustainability. **Potential to earn college credit through the AP Exam.**

- **Renewable Energy**

- Explores the principles and technologies behind renewable energy sources, such as solar, wind, hydro, geothermal and biomass.

A few photos from Earth and Space Science courses:

Highlighting hands-on learning, activities and labs.

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Secondary Science Update



Students in SoWashCo have a wide range of options beyond the required science courses – some can replace a required course and some extend learning beyond the required course.

Replacing or extending beyond High School Biology:

- **AP Biology**

- An intensive examination of the underlying principles of biology. An emphasis on laboratory design and reporting of data. **Potential to earn college credit through the AP Exam.**

- **IB Biology 1 and IB Biology 2 (two full years)**

- The International Baccalaureate (IB) course prepares students for further study of pure and applied sciences in higher education. Critical analysis of scientific literature and experimental design. The course includes formal lab reports and participation in the IB Group 4 Project. **Potential to earn college credit through the IB Exam.**

Secondary Science Update



Students in SoWashCo Schools have a wide range of options beyond the required science courses – some can replace a required course and some extend learning beyond the required course.

Replacing or extending beyond High School Biology:

- **Anatomy and Physiology**

- An intensive examination of the underlying principles of biology. An emphasis on laboratory design and reporting of data.

- **IB Sports Exercise and Health Sciences**

- The International Baccalaureate (IB) course prepares students for further study of pure and applied sciences in higher education. Critical analysis of scientific literature and experimental design. The course includes formal lab reports and participation in the IB Group 4 Project.

Potential to earn college credit through the IB Exam.

A few photos from Life Science courses:

Highlighting hands-on learning, activities and labs.

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Secondary Science Update



Students in SoWashCo have a wide range of options beyond the required science courses – some can replace a required course and some extend learning beyond the required course.

Replacing or extending beyond High School Physical Sciences:

- **Honors Chemistry**

- The course develops a deep conceptual understanding of matter and energy at the molecular level. Strong use of mathematics and analytical reading, laboratory work and writing.

- **AP Chemistry**

- Highly rigorous exploration of physical and chemical properties of matter. Focuses on thermochemistry, acids and bases, redox reactions, chemical equilibrium, precipitation equilibrium, reaction spontaneity, electrochemistry and organic chemistry. **Potential to earn college credit through the AP Exam.**

Secondary Science Update



Students in SoWashCo have a wide range of options beyond the required science courses – some can replace a required course and some extend learning beyond the required course.

Replacing or extending beyond High School Physical Sciences:

- **IB Chemistry 1 and IB Chemistry 2 (two full years)**
 - Expands on basic knowledge of chemistry and prepares students for further study of pure and applied sciences in higher education. The course will help students to develop the ability to critically analyze scientific literature and to develop manipulative and experimental skills necessary to perform college level scientific investigations. **Potential to earn college credit through the IB Exam.**

Secondary Science Update



Students in SoWashCo Schools have a wide range of options beyond the required science courses – some can replace a required course and some extend learning beyond the required course.

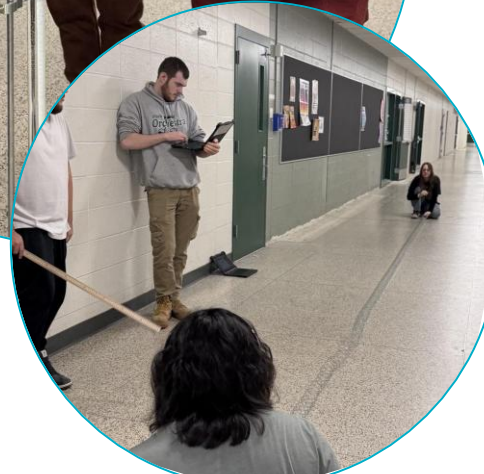
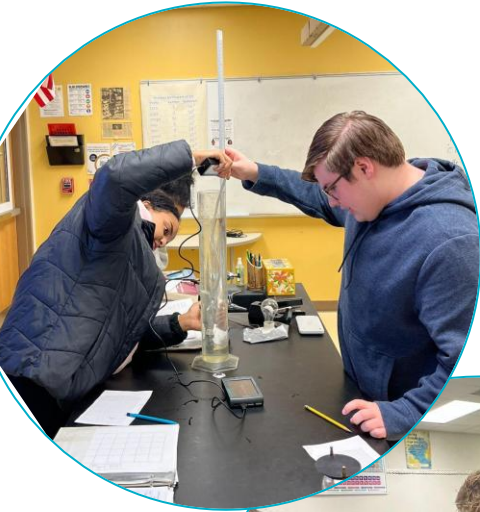
Replacing or extending beyond High School Physical Sciences:

- **AP Physics 1 and AP Physics 2 (two full years)**
 - An in-depth exploration of motion, forces, energy, momentum, rotational motion, fluids, thermodynamics, electricity, and magnetism, light and optics, waves, sound as well as atomic, nuclear and quantum physics. **Potential to earn college credit through the AP Exams.**
- **IB Physics**
 - College-level, robust, mathematically-based exploration of mechanics, motion, forces, work, power, energy, conservation laws, static and current electricity, magnetism and magnetic induction. **Potential to earn college credit through the IB Exam.**

A few photos from Physical Science courses:

Highlighting hands-on learning, activities and labs.

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Secondary STEM Opportunities



MIDDLE SCHOOL STEM

Students in middle school take one trimester of STEM per year.

- **Coding** (6th Grade)
 - An introductory computer science course that engages students in creating interactive websites, apps, and games while developing foundational skills in problem-solving, collaboration, and creative expression.
- **STEM 1** (7th Grade)
 - Introduces students to the Engineering Design Process by challenging them to research, prototype, and test diverse projects ranging from popsicle stick bridges and robotic arms to 3D-designed home models.
- **STEM 2** (8th Grade)
 - Advances students' mastery of the Engineering Design Process through complex projects such as hydraulics, robotics, and maglev vehicles with an emphasis on data collection, iteration, and collaboration.

Secondary STEM Opportunities



HIGH SCHOOL STEM

High School students have numerous opportunities to take STEM related courses.

- Introduction to Engineering Design
- Principles of Engineering
- Civil Engineering & Architecture
- Computer Integrated Manufacturing
- **AP Computer Science Principles**
- **AP Computer Science A**
- Engineering Design & Development
- Principles of Biomedical Sciences
- Human Body Systems
- Medical Interventions
- Biomedical Innovations
- Web Graphics and Animation 1
- Web Graphics and Animation 2
- Digital/Video Game Design
- CAD Design A
- CAD Design B
- **AP Computer Science A**
- **AP Computer Science Principles**
- **IB Computer Science**
- How to Make Almost Anything

Elementary Science



STARLAB Planetarium

- Visits all 16 elementary schools every year
- Immersive STEM experiences
 - Empower scientific literacy
 - Inspire curiosity
 - Promote lifelong learning
- Standards-Aligned Curricula
 - Astronomy
 - Geology
 - Meteorology



A banner with a background image of a forest. On the left is a wooden sign for 'NEWPORT BAILEY FAMILY SCHOOL FOREST PARK'. The sign is blue with white text and a circular logo at the top showing a boat on water. The text on the sign reads: 'CITY OF NEWPORT' at the top, 'NEWPORT BAILEY FAMILY SCHOOL FOREST PARK' in large letters, 'IN COOPERATION WITH SOUTH WASHINGTON COUNTY MD 480' in smaller letters, 'MD DEPARTMENT OF NATURAL RESOURCES' below that, and 'ESTABLISHED 1993' at the bottom. To the right of the sign are the logos for 'MD DEPARTMENT OF NATURAL RESOURCES' and 'SO WASH CO SCHOOLS'. The 'SO WASH CO SCHOOLS' logo is colorful, with 'SO' in orange, 'WASH' in green, 'CO' in blue, and 'SCHOOLS' in white text on a blue background. The main title 'NEWPORT BAILEY SCHOOL FOREST LEARNING STATION GUIDE' is centered in large, bold, black letters.

[illegible]

- FREE field trip for all students
- Amazing natural resource to extend learning in nature
- School Forest Kits



STEM Learning



- Media Specialist in each building
- Extensive STEM Library
 - Bee Bot Hive
 - Dash & Dot Robots
 - Sphero Bolt+
 - Indi Cars
- Coding
- Makerspaces
 - Lego WeDo
 - Little Bits
 - MakeDo Tools



Coding Robot Progression



Bee Bot



Indi



Dash



Bolt+

Screen-free
directional
logic

Kindergarten

Screen-free
color-based
programming

1st/2nd Grade

App based
visual block
coding

3rd/4th Grade

App based
advanced
automation
and data
4th/5th Grade

Indi



Each color represents a type of movement

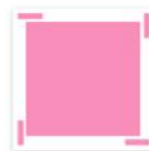
Indi will move for 3 seconds or until it encounters another color



Green



Start,
Increase Speed



Pink



90° Left Turn



Yellow



Decrease Speed



Blue



90° Right Turn



Red



Stop



Orange



45° Left Turn



Purple



Celebrate



Teal



45° Right Turn

Questions?