

**RFP No. 2021-22**  
**High School Science - Integrated Physics and Chemistry**  
**Core Resource Adoption**

**Rationale for Purchase:**

The Integrated Physics and Chemistry (IPC) course was developed and implemented in Washington County Public Schools prior to 2015 after Maryland's adoption of the Next Generation Science Standards (NGSS). The NGSS includes three distinct and equally important dimensions to learning science - Crosscutting Concepts, Science and Engineering Practices, and Disciplinary Core Ideas. These dimensions work together to help students build a cohesive understanding of science over time.

With this change in standards and in approach to teaching and learning science, older science texts and resources no longer align in content or pedagogy, nor do they adequately prepare students for the Maryland Integrated Science Assessment (MISA). Over time, vendors have aligned their products to reach the demands of the NGSS philosophy. In the meantime, high quality science instructional materials that are aligned to the Maryland College and Career Ready Standards and the NGSS have been provided within the WCPS IPC Essential Curriculum in lieu of a single core resource. This a la carte approach, while providing teachers with many excellent instructional resources, includes many different resource locations for a classroom teacher to reference and make sense of in order to most effectively and coherently plan a single unit of study. Acquiring a core science resource will consolidate content and pedagogy into a single platform for planning and facilitation of high quality learning experiences with students.

Given the need to improve the teaching and learning of this science course for the sake of all learners through high quality materials and experiences, the teacher selection committee highly recommends the purchase of Science Techbook by Discovery Education.

**Recommended Purchase:**

*Science Techbook - Physics and Chemistry* by Discovery Education

Discovery Education Science Techbook is a fully digital (only) interactive text which blends text and media for students with different abilities and learning styles. Science Techbook fully supports the instructional shifts required by the NGSS, embraces the philosophy of three-dimensional learning, and addresses ALL standards necessary for IPC. In addition to content chosen to directly support the NGSS, model lessons in every concept reflect the interaction of the Science and Engineering Practices (SEPs), Disciplinary Core Ideas (DCI), and Cross-Cutting Concepts (CCC); these lessons outline what each of the dimensions mean in practice for educators. Science Techbook uses an inquiry-based format along with interactive investigations, balancing critical thinking and problem solving with disciplinary literacy and analytical writing through the 5E instructional model (Engage, Explore, Explain, Elaborate with STEM, and Evaluate). Science Techbook's core is real-world problem solving and three-dimensional learning for students. Students have multiple opportunities to interact with challenging and interesting STEM experiences and to develop and deepen their knowledge of what it means to think about the world from the perspectives of scientists, engineers, and other STEM professionals.

Some of the key, interactive, digital features of the Science Techbook include:

- Active investigation of phenomena through questioning, modeling, data collection and analysis, allowing students to generate evidence of sensemaking.
- Embedded differentiation strategies to help teachers support students with varied needs as they progress through NGSS expectations to acquire the required knowledge and conceptual understanding of the scientific ideas.
- Research-based 5E instructional pathway.
- Formative and Summative Assessments embedded into the learning cycle for each Science Techbook unit.
- Technology Enhanced Items (TEIs) which allow students to demonstrate 3D learning with responses that feed directly to a Teacher Dashboard.
- Lesson planning, differentiation, progress monitoring, and professional growth opportunities to provide teachers with time-saving support.
- Exclusive, original and highly engaging multimodal content which makes science exciting and relevant for all students.
- Engaging hands-on and virtual investigations and labs.

**Cost of Purchase: \$42,600**

<b>Title of Item / Description</b>	<b>Order Quantity</b>	<b>Unit Price (per student per year)</b>	<b>Extended Price for 2 years</b>
Science Techbook - Chemistry & Physics Digital Student Licenses	1,200	\$11.50	\$27,600.00
Science Techbook - Chemistry & Physics Digital Teacher License	30	Gratis	Gratis
Professional Development - 24 hours of virtual training			\$15,000.00
<b>GRAND TOTAL</b>			<b>\$42,600.00</b>

**Selection Process:**

January 4, 2021	RFP Issued
February 9, 2021	Deadline for RFP proposal submission
February 17, 2021	Supervisor and Content Specialists narrowed selection
March 1, 2021	Finalist presented resource to selection committee
March 3, 2021	Finalist presented resource to selection committee
March 4 - May 7, 2021	Selection committee reviewed resources
May 10, 2021	Selection committee selected recommended resource
May 17, 2021	Presentation to C&I Committee
June 1, 2021	Request Board approval for purchase

**Selection Committee Members:**

Boonsboro High School	Tutus Muniz, Sherry Spithaler
Clear Spring High School	Chastity Gloyd
North Hagerstown High School	Megan Searfoss
Smithsburg High School	Paula Bright, Raymond Johnston
South Hagerstown High School	Don Custer

**Selection Criteria:**

Resources were evaluated in the following areas, adapted from the EQUIP rubric (Educators Evaluation Quality Instructional Products):

- Curriculum Alignment - content aligned to the Next Generation Science Standards and WCPS Science Transfer Goals
- Curriculum Delivery - instructional strategies, support of teacher pedagogy, balance of conceptual and procedural, reasoning, critical thinking, problem solving, modeling of science concepts, and Science and Engineering Practices
- Content Delivery - student relevance, real-world application, levels of rigor, adaptive technology, addresses Disciplinary Core Ideas (DCI), science simulations, and employs the Cross-Cutting Concepts (CCC) for learning science content
- Student Interest / Engagement - attractive, age-appropriate, clear, builds motivation and confidence in science, builds self-efficacy, feedback to students
- Alignment to Student Needs - accessibility, intervention resources, enrichment resources, ELL resources, COMAR - Represents genders, ages, races, ethnicities and religions fairly and equally
- Additional Materials - professional development, item data bank, laboratory resources, investigation/activity books, variety and quantity of study aids, reports, free automatic product updates/upgrades/revisions
- Technology Compatibility - compatible with network, compatible with devices, accessible when internet is not available, accessible from home, single sign on for users, easy to use interactive product, variety of science tools available (calculator, data collection & analysis tools, graphing), student tracking methods - progress monitoring

**Teacher Comments about Science Techbook by Discovery Education:**

- Teacher 1 - Loved the fact that this fully supports the 5 E lesson planning model. There was a variety of student interactive activities/ questions/ writing/ matching etc.
- Teacher 2 - The teacher version provides a very clear overview with the model lesson. It also lays out the major content and clearly defines the NGSS standards overview. This resource will catch the students eye and encourage engagement in the lessons. The abundance of the various resources will allow students to dive deeper into topics they wish to explore. There are lots of real world examples and current events.
- Teacher 3 - Very real-world and relevant to students. The STEM project was designed as a relevant project/problem for students to deal with. The lessons were designed to allow students to work at a rigorous level.
- Teacher 4 - There is an A reading level and B reading level which would be great for the IPC group. The biggest assets of this resource is the engagement and interactivity of the design.
- Teacher 5 - Attractive, easy to navigate format. Great graphics and video. Access to discovery content, like Mythbusters. Discovery's job is to entertain. They do that, and we can use that to tie it to our curriculum for student learning, interest, and engagement. The labs are NGSS style. The content is diverse, and there is SO MUCH for each concept that we can use.
- Teacher 6 - They provide excellent resources for inquiry based labs. This is an excellent tool.
- Teacher 7 - formative assessments built in (with every page), populating student responses into a data dashboard. Can pull up assessment data on the dashboard

without names (anonymously) and discuss results as a whole class to create discourse.

- Teacher 8 - This resource does have the ability to align nicely to our curriculum. We would be able to connect our modules and essential questions within the modules to this resource. Nice guidelines of 5E style lesson plans...although teachers would have the ability to pull different parts of this resource to make lessons their own. There are many options for lesson topics to connect to real world science applications - modeling, simulations, student checks, phenomena, etc. Very creative and a large library to choose from.