2024 Instructional Material Summer Review Institute

Review Team Appraisal of Title

Grades 9-12 Chemistry

This appraisal form is provided for use by educators responsible for the selection of instructional materials for implementation with districts and charter schools across New Mexico to meet the need of their student populations.

NMPED Adoption Information

Text Title	Experience Chemistry -- Consumable Student Edition with 6-Year Digital License	Publisher	Savvas Learning Company, LLC
SE ISBN	9781418326111	TE ISBN	9781418327248
SW ISBN		Grade Level/Content	Grades 9-12 Chemistry

Core Instructional Material Designation *(Core Instructional Material is the comprehensive print or digital educational material, including basal material, which constitutes the necessary instructional components of a full academic course of study in those subjects for which the department has adopted content standards and benchmarks.)*

Recommended (90% and above)	☐	**Recommended with Reservations** (80-89%)	☑	**Not Recommended and Not Adopted** (below 80%)	☐

Total Score - *The final score for the materials is averaged between the team of reviewers.*

Average Score
87%

Cultural and Linguistic Relevance Recognition - *Materials are reviewed for relevant criteria pertaining to the support for teachers and students in the material regarding cultural relevance and the inclusion of a culturally responsive lens. Those materials receiving a score of 90% or above on the CLR portion of the review are recognized as culturally and linguistically relevant.*

CLR Recognized ☐

Average Score
50%

FOCUS AREA 6: CULTURAL AND LINGUISTIC PERSPECTIVES
Instructional materials represent a variety of cultural and linguistic perspectives.
Statements of appraisal and supporting evidence:

The instructional materials provide diverse images, stories, and information without reinforcing stereotypes, fostering a broad understanding of different groups. The materials prompt students to engage in interdisciplinary activities and real-life connections through inquiry labs and projects, including non-STEM career options like being a chef. While encouraging collaboration and sharing personal experiences is apparent in the materials, the materials do not explicitly prompt students to explore language cognates nor affirm their cultural backgrounds.

FOCUS AREA 7: INCLUSION OF CULTURALLY AND LINGUISTICALLY RESPONSIVE LENS
Instructional materials highlight diversity in culture and language through multiple perspectives.
Statements of appraisal and supporting evidence:

No evidence of this focus area is found in the material.

Science Standards Review - *Materials are reviewed for alignment with the state adopted content standards, benchmarks and performance standards. The science standards include the performance expectations (PEs), disciplinary core ideas (DCIs), science and engineering practices (SEPs), crosscutting concepts (CCCs), and connections (CONNs) of the Next Generation Science Standards (NGSS). They also include the six NM StemReady! science standards.*

Average Score
88%

OVERALL ALIGNMENT
Materials align with the science standards overall.
Statements of appraisal and supporting evidence:

The instructional materials partially align to the NM STEM Ready! Science Standards. Standards such as structures and properties of matter and chemical reactions are met throughout the resource in a variety of manners. The energy standards are met in a majority of areas but have some missing components, such as showing the availability of energy limits that can occur in a system. This material partially aligns with the standard with the explanation of Coulomb's law relating positional energy to force but it does not make the explicit connection to an energy field. Also, the material partially aligns with the standard as the only energy conversion it discusses is chemical potential energy converted to electrical energy or light. The instructional materials only partially include the NM specific standard HS-SS-1, which allows students to research nuclear technology near them, but not assess New Mexico's role in nuclear chemistry and its role in the 21st century. The instructional materials align with the CCSS standards for ELA in providing students with the opportunity to conduct short research to answer a question or solve a problem, with the ability to narrow or broaden the inquiry as appropriate, synthesize multiple sources, and demonstrate an understanding of the subject investigated. Finally, the instructional materials align with all standards for CCSS math in grades 9-12 NGSS throughout units.

STRUCTURES AND PROPERTIES OF MATTER
Materials align to the physical science performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.
Statements of appraisal and supporting evidence:

The materials are aligned to the structures and properties of matter standards. The materials provide storyline plans and investigative plans that layout experiences in a manner that is meaningful and appropriately advances and engages student learning. The materials prompt students to explain how the periodic table orders elements and places those with similar chemical properties in column, as well as investigate how the repeating patterns of the table reflect patterns in outer electron states.

CHEMICAL REACTIONS
Materials align to the physical science performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.
Statements of appraisal and supporting evidence:

The materials are aligned with the physical science performance expectation and related components regarding chemical reactions. The instructional materials prompt students to explore how atoms are conserved and that chemical properties of elements can be used to describe and predict chemical reactions. There are visual representations, animations, simulations, and differentiation strategies provided for instructors and students in order to meet the grade level standards of this performance expectation.

ENERGY
Materials align to the physical science performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.
Statements of appraisal and supporting evidence:

Instructional materials align with the topic of energy physical science, performance expectations and related components. The material offers opportunities for students to explore light and the movement of electrons, but it does not discuss transferring energy into sound. The instructional materials also prompt students to explore and model all forms of energy at the microscopic scale. The material effectively explores the combination of the motion of particles and the energy associated with their configuration. However, how relative position energy can be thought of as stored in fields including radiation is not addressed.

EARTH'S SYSTEMS
Materials align to the earth and space science performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.
Statements of appraisal and supporting evidence:

Instructional materials are mostly aligned with the physical science performance expectations and related components of this focus area. The instructional materials provide students with opportunities to assess how, when evaluating solutions, the importance of taking into account a range of constraints including cost, safety, reliability, and aesthetics; as well as social, cultural, and environmental impacts. The materials also provide an opportunity for students to engage with reading about surface water and the cycling of matter through dynamic processes. However, a focus on the physical and chemical processes of water is not fully addressed.

HUMAN SUSTAINABILITY

Materials align to the earth and space science performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.

Statements of appraisal and supporting evidence:

The instructional materials align with sustainability and the Earth and Space performance expectations and components, which help students learn by analyzing energy production and resource extraction costs, risks, and benefits. They use the CER assessment method to focus on economic, social, environmental, and geopolitical factors. In these materials, students develop solutions to prevent additional ecological damage, assess design solutions, and explore biofuel sources such as algae and wood. The emphasis is on critical thinking, data interpretation, and understanding human impacts to address climate change and its future implications. The materials invite students to participate in discussions about scientific claims and computational modeling activities, including predicting changes like flooding and rising global temperatures based on human-generated greenhouse gases. The materials also allow students to explore how the ocean, atmosphere, and biosphere interact in response to human activities through computer simulations and interactive learning tools.

ENGINEERING DESIGN

Materials align to the engineering design performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.

Statements of appraisal and supporting evidence:

The instructional materials are aligned with the engineering standards by giving students the opportunity to demonstrate their understanding by analyzing major global challenges through qualitative and quantitative means for solutions accounting for societal needs. The materials allow students to design solutions to complex real-world problems by having students break down the problems into smaller problems that can be solved through engineering. The materials instruct students to prioritize criteria and consider constraints while evaluating a solution designed for complex real-world problems. The material has students use computer simulations to model proposed solutions to complex real-world problems that have specific criteria and constraints to be considered in the solution designs.

CCSS for ELA and Math in Grades 9-12 NGSS

Materials align to the ELA and math standards identified in grades 9-12 Chemistry NGSS.

Statements of appraisal and supporting evidence:

The instructional materials align with the CCSS for ELA and fully align with the CCSS for math in grades 9-12 NGSS. In the CCSS for ELA, the materials prompt students to revise, edit, and re-write their claim. The materials also prompt students to synthesize information from a range of sources into a coherent understanding of a process, phenomena, or concept. For the CCSS math standards, the instructional materials prompt students to reason abstractly and quantitatively.

Science Content Review- *Materials are reviewed against relevant criteria pertaining to the support for teachers and students in the specific content area reviewed.*

Average Score
100%

FOCUS AREA 1: PHENOMENA-/PROBLEM-BASED AND THREE-DIMENSIONAL APPROACH
Instructional materials are centered around high quality phenomena and/or problems and require a three dimensional approach to make sense of the phenomena or to solve the problems.

The instructional materials focus on student needs and interests, align with the three-dimensional NM STEM Ready! Standards, and provide engaging phenomena-based storyline resources. These materials are designed to support student sense-making through various sections, including addressing preconceptions and integrating the three dimensions from the NGSS. Some culminating projects incorporate the three dimensions of the standards into activities such as claim-evidence-reasoning (CER) and project-based learning. The materials also include natural and designed phenomena relevant to students, ensuring coherence with experiences and lesson activities. This student-centered approach ultimately drives student learning through relatable questions and phenomena.

FOCUS AREA 2: THREE-DIMENSIONAL ASSESSMENT
Assessments provide tools, guidance and support for teachers to collect, interpret and act on data about student progress toward the learning goals of the 3 dimensional standards.

The instructional materials offer students engaging tasks and include various assessment options across all aspects, including feedback from teachers and peers and opportunities for self-reflection. These resources cater to different learning styles and allow students to present evidence, receive feedback, and reflect on activities within 5E lessons. The website provides a range of activities and assessments, such as lab-based, problem-based, and performance-based assessments, along with interactive 3D assessments. Furthermore, the materials support the CER activity by guiding students to work independently, first with teacher supervision and then in groups for peer critique.

FOCUS AREA 3: TEACHER SUPPORTS
Materials include opportunities for teachers to effectively plan and utilize materials.

The instructional materials provide a comprehensive guide for teachers. This includes a list of necessary supplies and procedures for conducting lab activities safely. The materials also support integrating technology, such as virtual labs and animations, to enhance student learning. Furthermore, the materials include assessments and guidance for students at different proficiency levels, ensuring inclusivity and effective progress monitoring and offer educators with multiple examples to interpret student evidence of learning and provide constructive feedback to promote successful learning outcomes across all student levels.

FOCUS AREA 4: STUDENT CENTERED INSTRUCTION
Materials are designed for each student's regular and active participation in science content.

The instructional materials engage students by connecting their prior knowledge to relevant phenomena or problems and providing them opportunities to actively participate in their learning. These resources also facilitate students' sharing their understanding of the investigative phenomena and CERs, which are consistently revisited. The materials ensure a coherent flow of lessons, maintaining a direct connection between experiences and phenomena. Each investigation experience is structured, with clear goals, activities, and pacing, ultimately meeting the standard by engaging students' curiosity with real-world phenomena.

FOCUS AREA 5: EQUITY
Materials are designed for all learners.

Instructional materials are designed to help students engage with grade-level science and engineering on a deeper level by providing extensions and real-world connections to their learning. These resources are meant to support teachers in modifying activities to ensure student comprehension of scientific concepts. The materials and assessments are accessible, offering various ways for students to build and reflect on their science knowledge. Teachers can utilize a wide range of online resources from the materials to support students as needed, fostering equity, individual learning, and peer reflection in science education.

All Content Review - *Materials are reviewed against relevant criteria pertaining to the support for teachers and students in the material regarding the progression of the standards, lesson structure, pacing, assessment, individual learners and cultural relevance.*

Average Score
78%

FOCUS AREA 1 COHERENCE:
Instructional materials are coherent and consistent with the New Mexico Content Standards that all students should study in order to be college- and career-ready.
Statements of appraisal and supporting evidence:

The instructional material addresses the majority of the standards completely but does not fully meet the Earth and Space standards. The materials support students to show mastery for each standard in various ways such as performanced-based assessments, virtual labs, and physical inquiry labs. The materials require students to engage at an appropriate grade level. The material makes coherent and meaningful connections for students.

FOCUS AREA 2 WELL-DESIGNED LESSONS:
Instructional materials take into account effective lesson structure and pacing.
Statements of appraisal and supporting evidence:

The teacher material presents the learning progression to provide the scope and sequence of the content. The materials provide clear and measurable standards-aligned objectives. The material has clear and measurable language objectives for the lessons and activities. The material provides students with content-specific vocabulary but not general academic vocabulary. The layout of the materials has a visual design that maintains engagement with the subject. There are many different resources and strategies provided by the material that aid in making meaning of the text. The material allows for numerous, consistent and purposeful opportunities for students to review and practice the acquired knowledge.

FOCUS AREA 3 RESOURCES FOR PLANNING:
Instructional materials provide teacher resources to support planning, learning, and understanding of the New Mexico Content Standards.
Statements of appraisal and supporting evidence:

The instructional materials provide lessons that cross-reference the standards and provide the pacing for the content. Teachers are given various ways to help students with their academic development, including background support, related phenomenon, classroom modifications, addressing preconceptions, and more. The materials provide teachers with a multitude of resources on how to instruct the students, such as guiding questions and remediation instructions. The instructional material integrates a variety of digital learning opportunities with interactive components.

FOCUS AREA 4 ASSESSMENT:
Instructional materials offer teachers a variety of assessment resources and tools to collect ongoing data about student progress related to the standards.
Statements of appraisal and supporting evidence:

The instructional materials provide a variety of assessments that align with the the standards. The materials provide a variety of assessments, both formative and summative, that are aligned with the standards in digital materials, but the printed materials are not aligned to standards. The materials have various types of assessments related to the standards that have online scoring rubrics for all levels. The instructional materials provide assessment strategies and alternative assessments for the majority of learners, but there is not a focus on culturally and linguistically diverse students. Technology is used in various ways to assess the students in the instructional materials.

FOCUS AREA 5 EXTENSIVE SUPPORT:
Instructional materials give all students extensive opportunities and support to explore key concepts.
Statements of appraisal and supporting evidence:

This material can be customized in multiple ways, from editing documents to scaffolding materials for learners at different levels. The instructional materials provide differentiation in the strategies and activities to meet the needs of students working at all levels. The material provides support for ELD students but does not specifically include support for cultural and linguistically diverse students. The material provides access to the online material but there are no explicit instructions for teachers to incorporate parent involvement with the content. The material includes opportunities, including inquiry-based investigation, that engage the students in complex and creative problem solving.

FOCUS AREA 6 CULTURAL AND LINGUISTIC PERSPECTIVES: **Instructional materials represent a variety of cultural and linguistic perspectives.** *Statements of appraisal and supporting evidence:*
The instructional materials provide diverse images, stories, and information without reinforcing stereotypes, fostering a broad understanding of different groups. The materials prompt students to engage in interdisciplinary activities and real-life connections through inquiry labs and projects, including non-STEM career options like being a chef. While encouraging collaboration and sharing personal experiences is apparent in the materials, the materials do not explicitly prompt students to explore language cognates nor affirm their cultural backgrounds.
FOCUS AREA 7 INCLUSION OF CULTURALLY AND LINGUISTICALLY RESPONSIVE LENS: **Instructional materials highlight diversity in culture and language through multiple perspectives.** *Statements of appraisal and supporting evidence:*
No evidence of this focus area is found in the material.

Reviewers' Professional Summary - *These materials are reviewed by Level II and Level III educators from across New Mexico. The reviewers have brought their knowledge, experience and expertise into the review of these materials. They offer here their individual summary of the material as a whole.*

Reviewer #: R 88

Background and experience:

Level II Teacher endorsed in 7-12 Science, BA in forensic science, minor in chemistry. Nine years teaching science courses at the secondary level including Chemistry, AP Chemistry, Forensic Science, Earth and Space Science, and Physical Science. I have previously worked with PED and Cognia to assess the alignment of NM STEM READY! Science Standards to NM-ASR assessments and worked with AP New Mexico as an AP Chemistry mentor teacher.

Professional summary of material:

Experience Chemistry by Savvas provides a comprehensive and well-rounded set of resources, both virtually and in print, that allow students to engage with chemistry in a well thought-out manner. The storylines, investigations, and experiences provide students with phenomena that link throughout each and ground students, allowing them to make real-world connections to the chemistry they are exploring. The materials offer a variety of resources that are editable and modifiable, allowing for instructors to curate and tailor the material to the level of their students, both the advanced groups and the groups performing below grade level. The instructional materials also provide prompts on how to modify lessons for the classroom and differentiate materials to meet all levels of learners, including ELD students. This material is not tailored to the NM specific standards in a way that prompts students to meet that standard without modification by the teacher, nor does it provide cultural diversity in any way. Overall, I would recommend this material; the materials have solid physical science standards, and ties the earth and space systems and human sustainability standards into the resources in a way that does not feel disjointed and allows for students to meaningfully engage with them and make real-world connections. Finally, the resource provides many activities, lab experiences (of all levels), and assessment types (of all levels) that engage students in engineering and 3-dimensional processes.

Reviewer #: 89

Background and experience:

I hold an MA in science instruction and am a Level III Teacher with 6-12 science and language arts endorsements. With 19 years in education, I began by teaching middle school life science for five years before transitioning to an Early College High School, where I taught many different science courses over nine years, which included Physical Science, Introduction to Chemistry, Forensic Science, and PLTW Principles of Biomedical Science (PBS). Additionally, I taught AP Environmental Science online through the Virtual Learning Academy (VLA) for five years. My current position is as a Secondary Science Content Specialist.

Professional summary of material:

Savvas *Experience Chemistry* is "recommended with reservations". The instructional materials mostly align with the NM STEM Ready! Science Standards, covering topics such as the structures of matter and chemical reactions, albeit with some omissions. The program incorporates scaffolds and storyline plans to address various scientific topics, emphasizing student engagement through research, critical thinking, and modeling activities. It promotes student analysis, solution design, and understanding of human impacts on climate change. The materials facilitate student sense-making, offer diverse assessment options, and encourage active student participation. Additionally, they provide comprehensive resources to support teachers in effective implementation and modification, enhancing student comprehension and engagement. However, the materials lack comprehensive context, multiple perspectives, and critical reflection of cultural history in the field of chemistry. While some pieces of the instructional materials offer adaptability for student needs and feature extension and remediation strategies, they lack embedded and thoughtful cultural and linguistic diversity.

Reviewer #: 90

Background and experience:

I hold a BA in secondary science education and I am endorsed in TESOL. I have a level II teaching license and I have been teaching for twelve years. I have taught Physical Science, Chemistry, Honors Chemistry, AP Chemistry and Geology all in the high school setting. I have participated with NMPED to pilot a curriculum program for two years.

Professional summary of material:

The Savvas Experience Chemistry material is recommended with reservations for New Mexico teachers. It aligns well with NM STEM standards, fully meeting a significant majority and partially addressing the remainder. The teacher's edition is user-friendly, featuring easy navigation and clear cross-referencing between NM standards, NGSS, and pacing guides. This material offers a wealth of hands-on inquiry learning opportunities catering to various student levels. It also provides extensive online resources, including simulations and virtual labs. Every lesson incorporates three-dimensional learning and 5E instructional strategies, ensuring a comprehensive and modern approach to chemistry education. The material is notably student-centered, promoting active engagement. However, it's worth noting that cultural connections in the instructional material and activities are limited. The student edition is engaging but comes in a consumable format, which may require annual repurchasing. Overall, Savvas Experience Chemistry offers robust, standards-aligned content with diverse learning resources, making it a good choice for New Mexico chemistry classrooms despite its few drawbacks.