2023 Instructional Material Summer Review Institute

Review Team Appraisal of Title

Grades 7-12 Career and Technical Education

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	Introduction to Engineering -- Student Edition with six (6) eText student access code cards	**Publisher**	Savvas Learning Company LLC
SE ISBN	9780138046446	**TE ISBN**	9780138042936
SW ISBN	9780138042899	**Grade Level/Content**	9-12 CTE

Core Instructional Material Designation *(Core instructional material (CIM) is the comprehensive print and/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
80%

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 85% or above on the CLR portion of the review are recognized as culturally and linguistically relevant.*

CLR Recognized ☐

Average Score
78%

FOCUS AREA 3 CULTURAL AND LINGUISTIC PERSPECTIVES AND RESPONSIVENESS:
Instructional materials represent a variety of cultural and linguistic perspectives and highlight diversity in culture and language through multiple perspectives.
Statements of appraisal and supporting evidence:

Students are provided with examples of technology and engineering solutions from a global perspective. There are references to developing countries and technologies utilized to improve quality of life on a global scale and students are tasked with working in teams to solve problems in real-world scenarios. The language in the materials encourages students to bring their personal experiences into the conversation in the classroom. Two references in the text connect directly to New Mexico culture and contributions to society. The first atomic bomb test in Alamogordo, NM, is mentioned, and Santa Fe artist Georgia O'Keefe is quoted. However, students have no opportunities to reflect upon New Mexico's cultures or societies. Students are tasked with considering multiple perspectives and collaborating to solve problems.

CTE Standards Review - *Materials are reviewed for alignment with the state adopted content standards, benchmarks and performance standards.*

Average Score
56%

OVERALL ALIGNMENT
Materials align with the CTE standards overall, including strands 1-10: Academic Foundations; Communications; Problem Solving and Critical Thinking; Information Technology Applications; Systems; Safety, Health, and Environmental Management; Leadership and Teamwork; Ethics and Legal Responsibilities; Employability and Career Development; and Technical Skills.
Statements of appraisal and supporting evidence:

The materials partially align with the CTE standards; actionable portions of the standards are missing. For instance, when the standards require the students to apply, demonstrate, select, employ, exhibit, etc, the materials do not meet the standards. The materials do provide the student with some relevant information regarding each standard.

STRAND ALIGNMENT
Materials align with specific CTE content strands. *(Optional)*

Strand:	*Statements of appraisal and supporting evidence:*
Communications	The material covers communication strategies; however, the material does not allow the student to practice communication. For instance, the student is not required to listen or speak. In other instances, students do not have to develop/use and interpret tables, charts, and figures to support written and oral communications.
Problem Solving and Critical Thinking	The material teaches about critical thinking; however, the student is not prompted to employ critical thinking and interpersonal skills to resolve conflicts with staff or customers.
Safety, Health, and Environmental Management	Students are taught about job safety; however, students are not required to implement personal and job site safety rules and regulations to maintain safe and healthful working conditions and environments.
Ethics and Legal Responsibilities	Students are taught about the different components of ethics; however, students do not have to apply ethical reasoning to a variety of workplace situations in order to make ethical decisions.
Employability and Career Development	Students are taught about career portfolios and their importance; however, students are not required to maintain one.

CCTC Standards Review - *Materials are reviewed for alignment with the state adopted Common Career Technical Core Career Cluster and Career Pathway standards.*

Average Score
95%

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

The teacher's text contains references and additional resources for engagement. In the student edition and online materials, students are given a set of questions and skills to practice data manipulation and the use of technology. There are references to the uses of math concepts, relating them to real-world scenarios and requiring students to collaborate to find practical solutions. Additionally, there are examples and questions that require students to demonstrate their comprehension and interpretation of technical drawings and skills.

CAREER CLUSTER
Materials align to the CCTC standards for the Career Cluster reviewed.
Statements of appraisal and supporting evidence:

Materials in the text contain various projects and exploration activities centered around problem-solving in real-world scenarios. Students are tasked with working in teams to solve these problems and exploring applications of existing and developing technology related to the problem.

CAREER PATHWAY(s)
Materials align to the CCTC standards for the Career Pathway reviewed.
Statements of appraisal and supporting evidence:

Students are encouraged to incorporate strategies from disciplines to solve real-world scenarios and make practical and ethical decisions regarding possible solutions. Students are presented with the challenge of creating a console-based therapy device. They are prompted to utilize Excel to generate a histogram and cumulative distribution function (CDF), accompanied by interpreting the results. The material discusses emerging technological tools in STEM career fields; however, explicit instruction for students to apply processes and concepts related to using these technological tools is absent. Additionally, students are tasked with designing a prosthetic arm for an individual in a developing country. This project involves the use of tools like a 3D printer. Furthermore, students are prompted to solve a kinematic problem, applying their knowledge of kinematics to find a solution. Although the steps to make an ethical decision are discussed, students are not required to apply the knowledge acquired through their study of STEM to provide ethical and legal solutions to human and societal problems.

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

Average Score
88%

FOCUS AREA 1 SEQUENCING AND ARTICULATION
Instructional materials show sequencing and articulation within and across grade bands and/or pathways.
Statements of appraisal and supporting evidence:

The material comprehensively overviews commonly used electrical symbols in various engineering career fields. It guides the learner in developing foundational skills that progress toward more specific ones. For example, it defines different engineering careers and discusses their significance in the field. The material includes statistics as it refers to the application in engineering. Additionally, the material instructs students on equations as part of their educational curriculum. The material presents information on electrical concepts.

FOCUS AREA 2 ENGAGING INSTRUCTION
Instructional materials are engaging for students.
Statements of appraisal and supporting evidence:

The student is engaged in project-based learning experiences throughout the materials, i.e., a tree height project. This project is an example of hands-on learning that promotes active participation and practical application of knowledge. Furthermore, the materials provide information to the student regarding using robotics, wireless communication, and power generation in various engineering career fields. The text highlights these specific items and emphasizes engineering principles' real-world relevance and application.

FOCUS AREA 3 CAREER DEVELOPMENT
Instructional materials provide career development information for students.
Statements of appraisal and supporting evidence:

The materials introduce engineering professional organizations, although it lacks specific information about certifications or the pathways to obtain them. It also compares engineering and engineering technology, highlighting their similarities and differences, but does not mention any potential opportunities for cross-disciplinary collaboration between the two fields.

FOCUS AREA 4 TECHNOLOGY
Instructional materials incorporate opportunities to use industry appropriate technology.
*Statements of appraisal and supporting evidence***:**

The activities provide opportunities for students to practice using programs such as Excel, with additional guidance provided, such as utilizing spell check. Furthermore, the text discusses trends related to treatment and disposal, energy recovery, recycling, composting, and source reduction and reuse.

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, pacing, assessment, individual learners, and cultural and linguistic relevance and responsiveness.*

CLR Recognition Average Score	Average Score
78%	81%

FOCUS AREA 1 RESOURCES AND SUPPORTS FOR TEACHERS AND STUDENTS:
Instructional materials provide teacher resources to support planning and supports for all students.
Statements of appraisal and supporting evidence:

A list of lessons is provided in the table of contents and associated online materials, and each chapter in the teacher edition opens with a list of objectives and a chapter overview. However, there is no reference to connected standards or lesson pacing guides. The text incorporates interactive activities that promote student engagement and hands-on learning. In addition to the interactive activities, the material provides resources for teachers. It includes teaching tips, engage tips, and discussion questions that are readily available in the teacher edition material.

FOCUS AREA 2 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 materials include opportunities for students to demonstrate comprehension and learning. These assignments include in-class projects, group projects, student workbook activities, and assessments. Students can demonstrate competency utilizing a variety of methods and assignments. The teacher edition of the text guides English Learners and students with differentiated instruction needs. In addition, there are multiple opportunities for students to work collaboratively and provide peer-to-peer support in understanding and teamwork.

FOCUS AREA 3 CULTURAL AND LINGUISTIC PERSPECTIVES AND RESPONSIVENESS
Instructional materials represent a variety of cultural and linguistic perspectives and highlight diversity in culture and language through multiple perspectives.
Statements of appraisal and supporting evidence:

Students are provided with examples of technology and engineering solutions from a global perspective. There are references to developing countries and technologies utilized to improve quality of life on a global scale and students are tasked with working in teams to solve problems in real-world scenarios. The language in the materials encourages students to bring their personal experiences into the conversation in the classroom. Two references in the text connect directly to New Mexico culture and contributions to society. The first atomic bomb test in Alamogordo, NM, is mentioned, and Santa Fe artist Georgia O'Keefe is quoted. However, students have no opportunities to reflect upon New Mexico's cultures or societies. Students are tasked with considering multiple perspectives and collaborating to solve problems.

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 #: 61

Background and experience:

Since August 2021, the reviewer has developed and delivered engaging physical and biomedical science lessons as a science teacher, with ten additional years teaching science as well. The reviewer worked as a GED Math Instructor, assisting adult learners in preparing for the GED math test and providing tutoring and instruction. The reviewer also worked as a Laboratory Analyst, conducting RT-PCR sample testing, and as a Lab Assistant and Research Fellow, conducting research in the fields of biology and chemistry. Currently, the reviewer is pursuing an Ed.L. in Educational Leadership. The reviewer holds an M.Ed. in Curriculum and Instruction and a B.S. in Molecular Biology. The reviewer possesses teaching licenses at Level-IIIA in Texas and New Mexico.

Professional summary of material:

The materials partially align with the CTE standards, providing information relevant to each standard. The materials present comprehensive knowledge about careers in STEM and CTE, offering students numerous opportunities to explore career clusters and implement strategies through related projects. The materials feature various projects and activities focused on real-world problem-solving scenarios. Students are assigned team-based tasks to find solutions and explore the application of existing and emerging technologies. They are encouraged to incorporate strategies from multiple disciplines, make practical and ethical decisions, and work collaboratively. The materials introduce a professional engineering organization, although specific information about certifications or pathways to obtain them is not provided. A comparison between engineering and engineering technology is presented, highlighting the similarities and differences between the two fields without mentioning potential opportunities for cross-disciplinary collaboration. Additionally, the text discusses trends related to treatment and disposal, energy recovery, recycling, composting, and source reduction and reuse. The table of contents and online materials list the lessons, and each chapter in the teacher edition begins with objectives and a chapter overview. However, there is no reference to connected standards or lesson pacing guides, although online materials provide a digital glossary of terms. The text includes a glossary of terms, an index of terms, and reference tables that clarify technical symbols. The teacher edition provides teaching tips, differentiated instruction guides, and support for English Language Learners. Suggested websites are also included to support further study and student learning.

Reviewer #: 62

Background and experience:

The reviewer graduated from New Mexico Institute of Mining and Technology with a Bachelor's of Science in Technical Communication and a Bachelor's of Science in Psychology. The reviewer has an Alternative Teaching Licensure from Eastern New Mexico University and a Master's of Science Teaching from New Mexico Institute of Mining and Technology. The reviewer completed a Master's of Science in Educational Leadership through Western Governors University. The reviewer has 14 years of experience as a classroom teacher in the fields of Mathematics, Science, and STEM. Over the course of these 14 years, the reviewer has worked collaboratively with colleagues to vertically and horizontally align curriculum, make decisions and suggestions for improvement of current curriculum materials, and review texts for possible adoption at both the building and district level.

Professional summary of material:

The textbook includes a table of contents, chapter objectives, and overviews, but does not include references to connected standards or pacing guides for lessons. The materials do not explicitly reference connected standards and alignment. The online materials provided with the textbook contain hyperlinks to a digital glossary of terms, which is also included in the back of the text along with an index of terms and reference tables for technical symbols. The teacher edition offers additional resources such as teaching tips, differentiated instruction guides, engagement suggestions, cross-curricular lesson ideas, guiding questions, and support for English Learners. It also provides suggested websites for further study and guidance to support student learning. Teachers can create customized assessments for students with Individual Learning Plans and offer alternative demonstrations of competency to accommodate diverse student needs. The language used in the materials fosters an inclusive classroom environment by encouraging students to bring their personal experiences and diverse perspectives into discussions and projects. Activities promote cooperative work, the comparison of ideas, and consideration of multiple perspectives. The assignments vary in scope and depth depending on the chapter's focus, but they consistently encourage students to consider the needs of others in engineering solutions. While the textbook includes two references to New Mexico culture and contributions to society, namely the first atomic bomb test in Alamogordo and artist Georgia O'Keeffe, there are no specific opportunities for students to reflect upon New Mexico cultures or societies.

Reviewer #: 63

Background and experience:

The reviewer has a Bachelor's degree in Secondary Education in Mathematics and a Master's degree in Education with a focus on Mathematics. The reviewer has taught STEM courses for 10 years in the Philippines and an additional 4 years in New Mexico. The reviewer has Level III-A teaching licenses in both the Philippines and New Mexico. The reviewer serves as a coordinator of an After-Hour Academic Program addressing skill gaps in core subjects and providing intervention and remediation opportunities.

Professional summary of material:

The TE text is designed to make digital materials accessible to students by incorporating various links and providing a set of objectives for each chapter. However, it lacks estimated instructional time for individual lessons, chapters, and units, which could be helpful for teachers to plan their lessons effectively. The text includes interactive activities, such as spreadsheet activities using computers, robotics project-based activities, and designing a functional car project, among others. It also provides teaching tips, engage tips, and discussion questions that are visible in the teacher edition material. This helps teachers enhance student engagement and foster classroom discussions. While the TE material offers support for English Learners (EL) in the form of an EL corner, there is no specific support provided for students with Individualized Education Programs (IEP). The material incorporates a variety of assessments, including activities in the workbook (WBK), interactive projects, and chapter assessments, allowing for different ways of evaluating student understanding and progress. The TE includes a differentiated instruction corner, which provides alternative activity options for students, allowing them to choose their preferred mode of communication. The text uses the references of White Sands and Trinity tests to connect New Mexico and engage students in related activities, demonstrating an effort to make the material relevant and engaging for students. The material also integrates content areas by including the history of computer science and highlighting Alan Turing's contributions to society, while also addressing the challenges he faced. However, it lacks examples that provide an ethical description, potentially missing an opportunity to explore and discuss ethical considerations related to technology and computer science. Overall, the TE text offers accessibility features, interactive activities, teaching support, and varied assessments. While it addresses the needs of EL students and provides differentiated instruction options, it lacks specific support for students with IEPs and examples that explore ethical aspects of technology.