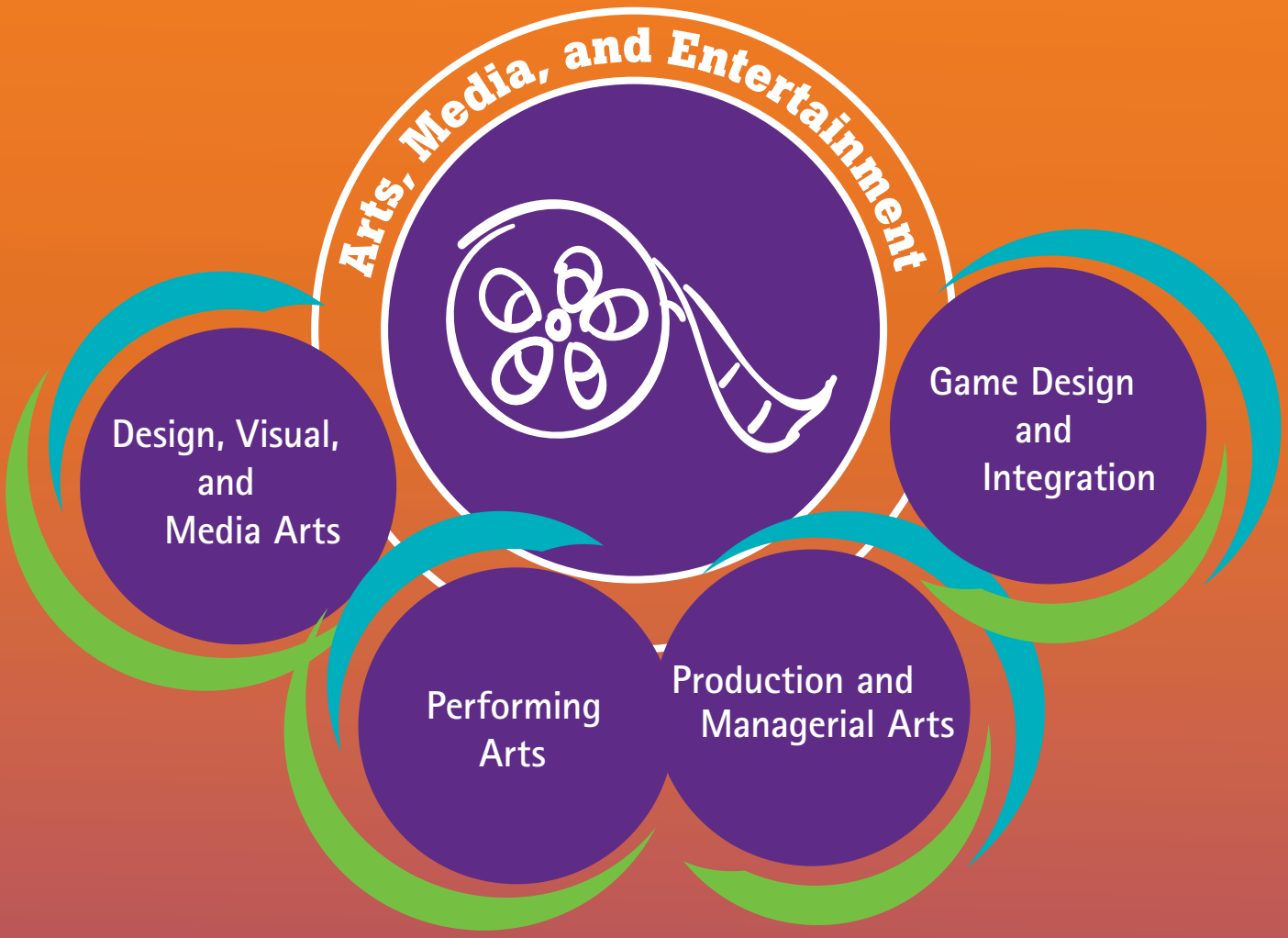
California Career Technical Education Model Curriculum Standards



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Overview

The Career Technical Education (CTE) Model Curriculum Standards publication is organized for use as a complete document or for access to individual industry sectors and pathways. The document includes Standards for Career Ready Practice—which describe the knowledge and skills that students need prior to entering a career technical education program—as part of the career technical education sequence or as integrated elements of other course work in preparation for careers and college.

Each of the 15 industry sector sections includes a description, anchor standards, pathway standards, and an academic alignment matrix. The standards can be adjusted to be part of the curriculum (grades seven through twelve), provided through adult education, or included in community college programs. The document also lists the representatives who participated in each sector's content development and the references that were consulted to revise the CTE standards.

Standards for Career Ready Practice

California's Standards for Career Ready Practice, which follow this overview, are based on the Career Ready Practices of the Common Career Technical Core (CCTC), a state-led initiative sponsored by the National Association of State Directors of Career Technical Education Consortium (NASDCTEc):

> Career Ready Practices describe the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline or level of education. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. (NASDCTEc 2012, 2)

California's 12 Standards for Career Ready Practice align with the state's CTE anchor standards and reflect the expectations from business and industry, labor and community organizations, and secondary and postsecondary education representatives from 42 participating states.

Anchor Standards

The 11 anchor standards build on the Standards for Career Ready Practice and are common across the 15 industry sectors. Content for these standards was drawn from several documents: "Preparing Students for the 21st Century Economy" (American Association of Colleges for Teacher Education and the Partnership for 21st Century Skills 2010); *How Should Colleges Prepare Students to Succeed in Today's Global Economy?* (Association of American Colleges and Universities and Peter D. Hart Research Associates, Inc. 2006); "Importance of Skills and Knowledge for College and Career Readiness," from *The MetLife Survey of the American Teacher: Preparing Students for College and Careers* (MetLife, Inc. 2011); and *Are They Really Ready to Work? Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce* (The Conference Board et al. 2006).

Each anchor standard is followed by performance indicators using action verbs from the Beyond Knowledge Construct, presented in a hierarchical progression of simple tasks to more complex tasks. Performance indicators provide guidance for curriculum design and standards measurement.

The industry-sector anchor standards have been customized with selected additions to better reflect the needs and special conditions of each industry sector.

Anchor Standard 1 (Academics) guides users to sector-specific core academic standards related to each industry sector, which are listed in the alignment matrix at the end of each sector section. Anchor standards 2–10 are deliberately aligned with one of the Common Core English language arts standards, using similar language demonstrating the natural connections between the two subjects. Anchor Standard 11 (Demonstration and Application) highlights classroom, laboratory, and workplace learning specific to the individual sector and pathways.

Pathway Standards

All 15 industry sectors contain multiple pathways. In order to be identified and listed for an industry sector, each pathway had to meet the following criteria:

- unique to an industry sector
- has an occupational focus
- consistent in size and scope
- composed of similar functions
- inclusive of all aspects of the industry
- includes 8–12 pathway-specific standards
- demonstrates sequence potential
- reasonable and appropriate for high school
- leads to high-skill, high-wage, or high-demand jobs
- sustainable and viable over the next 10 years

Academic Alignment Matrix

Each sector includes an academic alignment matrix that displays where a natural, obvious alignment occurs. Compiled by five teams of academic content experts in collaboration with industry-sector consultants, teachers, and other advisers, the alignment was selected if it was determined that the pathway standard would enhance, reinforce, or provide an application for a specific academic subject standard.

The alignment matrices include the subjects of Common Core English language arts and mathematics standards, history/social studies standards, and Next Generation Science Core Ideas. To assist with further review and implementation, each academic alignment is notated with specific pathway standards codes.

Implementation

The Standards for Career Ready Practice can be integrated with a course or incorporated into several courses over multiple school years (grades seven through twelve). The practices are expectations for all students, whether they are enrolled in a CTE program or following a more generalized course sequence. It is expected that all students who exit high school will be proficient in these practices.

The anchor standards are the basis for each of the pathways within each sector. These standards are designed to assist with the development of course curricula and instructional lesson plans; they describe what is to be taught and measured. In most cases, the teacher determines the sequence and strategies to be used to meet the needs of the student population he or she is serving.

The performance indicators that follow each standard offer guidance for both course design and student assessment. They are intended to guide course work as it is developed. The pathways organize the standards with a career focus, but they are not designed to be offered as single courses. Rather, the standards from each pathway are collected and organized into a sequence of learning. To meet local demands of business and industry and particular student populations, standards can be collected from more than one sector to create a course.

Using the academic alignment matrices as a resource, academic and CTE teachers can see where enhancements and support for both sets of standards can be initiated. CTE teachers can quickly identify academic standards that have a substantial relationship to their instruction. Likewise, academic teachers can specify individual academic standards and quickly identify related CTE standards, which will assist them in incorporating application and technology in their curricula and lessons.

The CTE Model Curriculum Standards are intended to serve the entire education community—from middle schools and high schools to postsecondary colleges and career training programs. A major aim of these standards is to prepare students for postsecondary education and training and to help them make a smooth transition into the workforce. In order for both the people and the economy of California to prosper, it is essential for all students to emerge from schools ready to pursue their career and college goals. Equipping all high school students with the knowledge and skills necessary to plan and manage their education and careers throughout their lives will help to guarantee these important outcomes. Strong CTE programs will continue to provide important educational opportunities to assist students as they pursue their dreams and strive for economic prosperity. The CTE Model Curriculum Standards are a resource for educators and the business world for ensuring high-quality CTE learning experiences and improved student outcomes in the twenty-first-century economy.

California Standards for Career Ready Practice

Standards for Career Ready Practice describe the fundamental knowledge and skills that a career-ready student needs in order to prepare for transition to postsecondary education, career training, or the workforce. These standards are not exclusive to a career pathway, a CTE program of study, a particular discipline, or level of education. Standards for Career Ready Practice are taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. Standards for Career Ready Practice are a valuable resource to CTE and academic teachers designing curricula and lessons in order to teach and reinforce the career-ready aims of the CTE Model Curriculum Standards and the Common Core State Standards.

1. Apply appropriate technical skills and academic knowledge.

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education. They make connections between abstract concepts with real-world applications and recognize the value of academic preparation for solving problems, communicating with others, calculating measures, and other work-related practices.

2. Communicate clearly, effectively, and with reason.

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, using written, verbal, electronic, and/or visual methods. They are skilled at interacting with others, are active listeners who speak clearly and with purpose, and are comfortable with the terminology common to the workplace environment. Career-ready individuals consider the audience for their communication and prepare accordingly to ensure the desired outcome.

3. Develop an education and career plan aligned with personal goals.

Career-ready individuals take personal ownership of their own educational and career goals and manage their individual plan to attain these goals. They recognize the value of each step in the educational and experiential process and understand that nearly all career paths require ongoing education and experience to adapt to practices, procedures, and expectations of an ever-changing work environment. They seek counselors, mentors, and other experts to assist in the planning and execution of education and career plans.

4. Apply technology to enhance productivity.

Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring and using new technology. They understand the inherent risks—personal and organizational—of technology applications, and they take actions to prevent or mitigate these risks.

5. Utilize critical thinking to make sense of problems and persevere in solving them.

Career-ready individuals recognize problems in the workplace, understand the nature of the problems, and devise effective plans to solve the problems. They thoughtfully investigate the root cause of a problem prior to introducing solutions. They carefully consider options to solve the problem and, once agreed upon, follow through to ensure the problem is resolved.

6. Practice personal health and understand financial literacy.

Career-ready individuals understand the relationship between personal health and workplace performance. They contribute to their personal well-being through a healthy diet, regular exercise, and mental health activities. Career-ready individuals also understand that financial literacy leads to a secure future that enables career success.

7. Act as a responsible citizen in the workplace and the community.

Career-ready individuals understand the obligations and responsibilities of being a member of a community and demonstrate this understanding every day through their interactions with others. They are aware of the impacts of their decisions on others and the environment around them and think about the short-term and long-term consequences of their actions. They are reliable and consistent in going beyond minimum expectations and in participating in activities that serve the greater good.

8. Model integrity, ethical leadership, and effective management.

Career-ready individuals consistently act in ways that align with personal and community-held ideals and principles. They employ ethical behaviors and actions that positively influence others. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the direction and actions of a team or organization, and they recognize the short-term and long-term effects that management's actions and attitudes can have on productivity, morale, and organizational culture.

9. Work productively in teams while integrating cultural and global competence.

Career-ready individuals positively contribute to every team as both team leaders and team members. They apply an awareness of cultural differences to avoid barriers to productive and positive interaction. They interact effectively and sensitively with all members of the team and find ways to increase the engagement and contribution of other members.

10. Demonstrate creativity and innovation.

Career-ready individuals recommend ideas that solve problems in new and different ways and contribute to the improvement of the organization. They consider unconventional ideas and suggestions by others as solutions to issues, tasks, or problems. They discern which ideas and suggestions may have the greatest value. They seek new methods, practices, and ideas from a variety of sources and apply those ideas to their own workplace practices.

11. Employ valid and reliable research strategies.

Career-ready individuals employ research practices to plan and carry out investigations, create solutions, and keep abreast of the most current findings related to workplace environments and practices. They use a reliable research process to search for new information and confirm the validity of sources when considering the use and adoption of external information or practices.

12. Understand the environmental, social, and economic impacts of decisions.

Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact other people, organizations, the workplace, and the environment. They are aware of and utilize new technologies, understandings, procedures, and materials and adhere to regulations affecting the nature of their work. They are cognizant of impacts on the social condition, environment, workplace, and profitability of the organization.

Note: As stated previously, California's Standards for Career Ready Practice are based on the CCTC Career Ready Practices posted at https://careertech.org/ (accessed June 8, 2016).

Arts, Media, and Entertainment

Sector Description

Of all the career industries, the Arts, Media, and Entertainment sector requires perhaps the greatest cross-disciplinary interaction because the work in this sector has a propensity to be largely project-based, requiring both independent work and interdependent management skills for career success. New technologies are also constantly reshaping the boundaries and skill sets of many arts career pathways. Consequently, core arts-sector occupations demand constantly varying combinations of artistic imagination, metaphoric representation, symbolic connections, and technical skills. Successful career preparation involves both broad and in-depth academic and technical preparation as well as the cultivation of twenty-first-century skill assets, such as flexibility, problem-solving abilities, and interpersonal skills. Careers in the Arts, Media, and Entertainment sector fall into four general pathways: Design, Visual, and Media Arts; Performing Arts; Production and Managerial Arts; and Game Design and Integration. The anchor and pathway standards make explicit the appropriate knowledge, skills, and practical experience students should have in order to pursue their chosen profession, whether that profession requires postsecondary education, graduate training, or apprenticeship.

Learning the skills and knowledge for creating, refining, and sharing work in the Arts, Media, and Entertainment industry sector promotes teamwork, communication, creative thinking, and decision-making abilities—traits that are necessary to function successfully in the competitive and media-rich twenty-first century. Through the manipulation of sight, sound, and motion, those choosing a pathway from this sector reach out in unique ways to enhance the quality of life for those around them.

1.0 Academics

Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the Arts, Media, and Entertainment academic alignment matrix for identification of standards.

2.0 Communications

Acquire and accurately use Arts, Media, and Entertainment sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats. (Direct alignment with LS 9-10, 11-12.6)

2.1 Recognize the elements of communication using a sender–receiver model.

2.2 Identify barriers to accurate and appropriate communication.

2.3 Interpret verbal and nonverbal communications and respond appropriately.

2.4 Demonstrate elements of written and electronic communication such as accurate spelling, grammar, and format.

2.5 Communicate information and ideas effectively to multiple audiences using a variety of media and formats.

2.6 Advocate and practice safe, legal, and responsible use of digital media information and communications technologies.

3.0 Career Planning and Management

Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans. (Direct alignment with SLS 11-12.2)

3.1 Identify personal interests, aptitudes, information, and skills necessary for informed career decision making.

3.2 Evaluate personal character traits such as trust, respect, and responsibility and understand the impact they can have on career success.

3.3 Explore how information and communication technologies are used in career planning and decision making.

3.4 Research the scope of career opportunities available and the requirements for education, training, certification, and licensure.

3.5 Integrate changing employment trends, societal needs, and economic conditions into career planning.

3.6 Recognize the role and function of professional organizations, industry associations, and organized labor in a productive society.

3.7 Recognize the importance of small business in the California and global economies.

3.8 Understand how digital media are used by potential employers and postsecondary agencies to evaluate candidates.

3.9 Develop a career plan that reflects career interests, pathways, and postsecondary options.

4.0 Technology

Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Arts, Media, and Entertainment sector workplace environment. (Direct alignment with WS 11-12.6)

4.1 Use electronic reference materials to gather information and produce products and services.

4.2 Employ Web-based communications responsibly and effectively to explore complex systems and issues.

4.3 Use information and communication technologies to synthesize, summarize, compare, and contrast information from multiple sources.

4.4 Discern the quality and value of information collected using digital technologies, and recognize bias and intent of the associated sources.

4.5 Research past, present, and projected technological advances as they impact a particular pathway.

4.6 Assess the value of various information and communication technologies to interact with constituent populations as part of a search of the current literature or in relation to the information task.

5.0 Problem Solving and Critical Thinking

Conduct short as well as more sustained research to create alternative solutions to answer a question or solve a problem unique to the Arts, Media, and Entertainment sector, using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques. (Direct alignment with WS 11-12.7)

5.1 Identify and ask significant questions that clarify various points of view to solve problems.

5.2 Solve predictable and unpredictable work-related problems using various types of reasoning (inductive, deductive) as appropriate.

5.3 Use systems thinking to analyze how various components interact with each other to produce outcomes in a complex work environment.

5.4 Interpret information and draw conclusions, based on the best analysis, to make informed decisions.

6.0 Health and Safety

Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Arts, Media, and Entertainment sector workplace environment. (Direct alignment with RSTS 9-10, 11-12.4)

6.1 Locate, and adhere to, Material Safety Data Sheet (MSDS) instructions.

6.2 Interpret policies, procedures, and regulations for the workplace environment, including employer and employee responsibilities.

6.3 Use health and safety practices for storing, cleaning, and maintaining tools, equipment, and supplies.

6.4 Practice personal safety when lifting, bending, or moving equipment and supplies.

6.5 Demonstrate how to prevent and respond to work-related accidents or injuries; this includes demonstrating an understanding of ergonomics.

6.6 Maintain a safe and healthful working environment.

6.7 Be informed of laws/acts pertaining to the Occupational Safety and Health Administration (OSHA).

7.0 Responsibility and Flexibility

Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the Arts, Media, and Entertainment sector workplace environment and community settings. (Direct alignment with SLS 9-10, 11-12.1)

7.1 Recognize how financial management impacts the economy, workforce, and community.

7.2 Explain the importance of accountability and responsibility in fulfilling personal, community, and workplace roles.

7.3 Understand the need to adapt to changing and varied roles and responsibilities.

7.4 Practice time management and efficiency to fulfill responsibilities.

7.5 Apply high-quality techniques to product or presentation design and development.

7.6 Demonstrate knowledge and practice of responsible financial management.

7.7 Demonstrate the qualities and behaviors that constitute a positive and professional work demeanor, including appropriate attire for the profession.

7.8 Explore issues of global significance and document the impact on the Arts, Media, and Entertainment sector.

8.0 Ethics and Legal Responsibilities

Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms. (Direct alignment with SLS 11-12.1d)

8.1 Access, analyze, and implement quality assurance standards of practice.

8.2 Identify local, district, state, and federal regulatory agencies, entities, laws, and regulations related to the Arts, Media, and Entertainment industry sector.

8.3 Demonstrate ethical and legal practices consistent with Arts, Media, and Entertainment sector workplace standards.

8.4 Explain the importance of personal integrity, confidentiality, and ethical behavior in the workplace.

8.5 Analyze organizational culture and practices within the workplace environment.

8.6 Adhere to copyright and intellectual property laws and regulations, and use and appropriately cite proprietary information.

8.7 Conform to rules and regulations regarding sharing of confidential information, as determined by Arts, Media, and Entertainment sector laws and practices.

9.0 Leadership and Teamwork

Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution as practiced in the SkillsUSA career technical student organizations. (Direct alignment with SLS 11-12.1b)

9.1 Define leadership and identify the responsibilities, competencies, and behaviors of successful leaders.

9.2 Identify the characteristics of successful teams, including leadership, cooperation, collaboration, and effective decision-making skills as applied in groups, teams, and career technical student organization activities.

9.3 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace setting.

9.4 Explain how professional associations and organizations and associated leadership development and competitive career development activities enhance academic preparation, promote career choices, and contribute to employment opportunities.

9.5 Understand that the modern world is an international community and requires an expanded global view.

9.6 Respect individual and cultural differences and recognize the importance of diversity in the workplace.

9.7 Participate in interactive teamwork to solve real Arts, Media, and Entertainment sector issues and problems.

10.0 Technical Knowledge and Skills

Apply essential technical knowledge and skills common to all pathways in the Arts, Media, and Entertainment sector, following procedures when carrying out experiments or performing technical tasks. (Direct alignment with WS 11-12.6)

10.1 Interpret and explain terminology and practices specific to the Arts, Media, and Entertainment sector.

10.2 Comply with the rules, regulations, and expectations of all aspects of the Arts, Media, and Entertainment sector.

10.3 Construct projects and products specific to the Arts, Media, and Entertainment sector requirements and expectations.

10.4 Collaborate with industry experts for specific technical knowledge and skills.

11.0 Demonstration and Application

Demonstrate and apply the knowledge and skills contained in the Arts, Media, and Entertainment anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through the SkillsUSA career technical student organizations.

11.1 Utilize work-based/workplace learning experiences to demonstrate and expand upon knowledge and skills gained during classroom instruction and laboratory practices specific to the Arts, Media, and Entertainment sector program of study.

11.2 Demonstrate proficiency in a career technical pathway that leads to certification, licensure, and/or continued learning at the postsecondary level.

11.3 Demonstrate entrepreneurship skills and knowledge of self-employment options and innovative ventures.

11.4 Employ entrepreneurial practices and behaviors appropriate to Arts, Media, and Entertainment sector opportunities.

11.5 Create a portfolio, or similar collection of work, that offers evidence through assessment and evaluation of skills and knowledge competency as contained in the anchor standards, pathway standards, and performance indicators.

A. Design, Visual, and Media Arts Pathway

The Design, Visual, and Media Arts pathway includes those occupations that use visual art, digital media, and Web-based tools and materials as the primary means of communication and expression. In addition to an understanding of current workplace practice, this career pathway requires the development of knowledge and skills in both visual art concepts as well as new and emerging digital processes by which individuals are able to create and communicate complex concepts in a broad range of occupations and professions.

Sample occupations associated with this pathway:

- Digital Animator
- Artistic Director
- Commercial Artist
- Web Designer
- Museum Curator

A1.0 Demonstrate ability to reorganize and integrate visual art elements across digital media and design applications.

- A1.1 View and respond to a variety of industry-related artistic products integrating industry appropriate vocabulary.
- A1.2 Identify and use the principles of design to discuss, analyze, and create projects and products across multiple industry applications.
- A1.3 Describe the use of the elements of art to express mood in digital or traditional art work found in the commercial environment.
- A1.4 Select industry-specific works and analyze the intent of the work and the appropriate use of media.
- A1.5 Research and analyze the work of an artist or designer and how the artist's distinctive style contributes to their industry production.
- A1.6 Compare and analyze art work done using electronic media with those done with materials traditionally used in the visual arts.
- A1.7 Analyze and discuss complex ideas, such as distortion, color theory, arbitrary color, scale, expressive content, and real versus virtual in works of art.
- A1.8 Compare how distortion is used in a variety of media to modify the message being communicated.
- A1.9 Analyze the material used by a given artist and describe how its use influences the meaning of the work.

A2.0 Apply artistic skills and processes to solve a variety of industry-relevant problems in a variety of traditional and electronic media.

- A2.1 Demonstrate skill in the manipulation of digital imagery (either still or video) in an industry-relevant application.
- A2.2 Demonstrate personal style and advanced proficiency in communicating an idea, theme, or emotion in an industry-relevant artistic product.
- A2.3 Apply refined observation and drawing skills to solve an industry-relevant problem.
- A2.4 Use visual metaphors in creating an artistic product.
- A2.5 Compile a portfolio of multiple original two- and three-dimensional works of art that reflect technical skills in an industry-relevant application.
- A2.6 Create an artistic product that involves the effective use of the elements of art and the principles of design.
- A2.7 Create original works of art of increasing complexity and skill in a variety of media that reflect their feelings and points of view.
- A2.8 Plan and create artistic products that reflect complex ideas, such as distortion, color theory, arbitrary color, scale, expressive content, and real versus virtual.
- A2.9 Create a multimedia work of art that demonstrates knowledge of media and technology skills.

A3.0 Analyze and assess the impact of history and culture on the development of professional arts and media products.

- A3.1 Identify and describe the role and influence of new technologies on contemporary arts industry.
- A3.2 Describe how the issues of time, place, and cultural influence and are reflected in a variety of artistic products.
- A3.3 Identify contemporary styles and discuss the diverse social, economic, and political developments reflected in art work in an industry setting.
- A3.4 Identify art in international industry and discuss ways in which the work reflects cultural perspective.
- A3.5 Analyze similarities and differences of purpose in art created in culturally diverse industry applications.
- A3.6 Investigate and discuss universal concepts expressed in visual media products from diverse cultures.

A4.0 Analyze, assess, and identify effectiveness of artistic products based on elements of art, the principles of design, and professional industry standards.

- A4.1 Develop written consumer assessment rubrics for separate, industry-specific art products.
- A4.2 Deconstruct how beliefs, cultural traditions, and current social, economic, and political contexts influence commercial media (traditional and electronic).

A4.3 Analyze the aesthetic value of a specific commercial work of art and defend that analysis from an industry perspective.

A4.4 Analyze the relationship between the artist, artistic product and audience in both an existing and self-generated project.

A4.5 Analyze and articulate how society influences the interpretation and effectiveness of an artistic product.

A4.6 Create an artistic product for a specific industry and modify that product to accommodate a different aesthetic perspective.

A5.0 Identify essential industry competencies, explore commercial applications and develop a career specific personal plan.

A5.1 Compare and contrast the ways in which different artistic media (television, newspapers, magazines, and electronic media) cover the same commercial content.

A5.2 Explore the role of art and design across various industry sectors and content areas.

A5.3 Deconstruct works of art, identifying psychological content found in the symbols and images and their relationship to industry and society.

A5.4 Predict how changes in technology might change the role and function of the visual arts in the workplace.

A5.5 Create a commercial artistic product that communicates a cross-cultural or universal theme.

A5.6 Prepare portfolios of original art created for a variety of purposes and commercial applications.

A5.7 Synthesize traditional art work and new technologies to design an artistic product to be used by a specific industry.

A6.0 Analyze characteristics of subgenres (e.g., satire, parody, allegory, pastoral) that are used in poetry, prose, plays, novels, short stories, essays, and other basic genres.

A6.1 Evaluate the ways in which irony, tone, mood, the author's style, and the "sound" of language achieve specific rhetorical or aesthetic purposes or both.

A6.2 Analyze the way in which authors through the centuries have used archetypes drawn from myth and tradition in literature, film, political speeches, and religious writings.

A6.3 Debate the philosophical arguments presented in literary works to determine whether the authors' positions have contributed to the quality of each work and the credibility of the characters (philosophical approach).

A7.0 Demonstrate an understanding of the elements of discourse (e.g., purpose, speaker, audience, form) when completing narrative, expository, persuasive, or descriptive writing assignments.

A7.1 Use point of view, characterization, style (e.g., use of irony), and related elements for specific rhetorical and aesthetic purposes.

A7.2 Use language in natural, fresh, and vivid ways to establish a specific tone.

A7.3 Enhance meaning by employing rhetorical devices, including extended use of parallelism, repetition, analogy; incorporation of visual aids (e.g., graphs, tables, pictures); and the issuance of a call for action.

A7.4 Integrate databases, graphics, and spreadsheets into electronically processed documents.

A7.5 Revise text to highlight the individual voice, improve sentence variety and style, and enhance subtlety of meaning and tone in ways that are consistent with the purpose, audience, and genre.

A8.0 Understand the key technical and technological requirements applicable to various segments of the Media and Design Arts Pathway.

A8.1 Understand the component steps and skills required to design, edit, and produce a production for audio, video, electronic, or printed presentation.

A8.2 Use technology to create a variety of audio, visual, written, and electronic products and presentations.

A8.3 Know the features and uses of current and emerging technology related to computing (e.g., optical character recognition, sound processing, cable TV, cellular phones).

A8.4 Analyze the way in which technical design (e.g., color theory, lighting, graphics, typography, posters, sound, costumes, makeup) contributes to an artistic product, performance, or presentation.

A8.5 Differentiate writing processes, formats, and conventions used for various media.

A8.6 Analyze and assess technical support options related to various media and design arts.

A8.7 Evaluate how advanced and emerging technologies (e.g., virtual environment or voice recognition software) affect or improve media and design arts products or productions.

B. Performing Arts Pathway

The Performing Arts pathway focuses on the direct creation of art and entertainment by the individual artist instead of through a secondary physical medium. Performing artists are themselves the medium of creative expression.

Sample occupations associated with this pathway:

- Composer, Music Arranger, Conductor
- Actor (e.g., Stage, Film, Video, DVD), Performing Artist
- Singer, Dancer, Musician
- Voiceover Artist, Narrator

B1.0 Explore and formulate responses to peer and professional work using the fundamental elements of Theater, Dance, and Music.

- B1.1 Demonstrate movement skills, process sensory information, and describe movement using the professional vocabulary of dance.
- B1.2 Apply highly developed physical coordination and control when performing complex loco motor and axial movement phrases from a variety of genres (e.g., refined body articulation, agility, balance, strength).
- B1.3 Apply a wide range of kinesthetic communication demonstrating clarity of intent and stylistic nuance.
- B1.4 Differentiate dance vocabulary to describe movement and dance in a professional setting.
- B1.5 Create and perform complicated works of dance at a level of professionalism (i.e., a high level of refinement).
- B1.6 Perform in multiple professional dance genres integrating an advanced level of technical skill and clear intent.
- B1.7 Deconstruct formal and informal (improvisational) performances of theater, dance, and music, both live and electronic, and evaluate using appropriate artistic vocabulary.

B2.0 Read, listen to, deconstruct, and analyze peer and professional music using the elements and terminology of music.

- B2.1 Read a full instrument or vocal score with a direct industry connection (Film score, Philharmonic score, commercial underscore).
- B2.2 Describe how the elements of music are used.
- B2.3 Transcribe simple songs into melodic and rhythmic notation when presented.
- B2.4 Sight-read music accurately and expressively.
- B2.5 Analyze and describe significant musical events perceived and remembered in a given industry generated example.

B2.6 Analyze and describe the use of musical elements in a given professional work that makes it unique, interesting, and expressive.

B2.7 Demonstrate the different uses of form, both past and present, in a varied repertoire of music in commercial settings from diverse genres, styles, and professional applications.

B3.0 Observe, deconstruct, and analyze peer and professional theater, film, video, and electronic media and respond using the vocabulary of theater.

B3.1 Identify the use of metaphor, subtext, and symbolic elements in text and performance of professional theatrical work (live or recorded).

B3.2 Research, analyze, and plan a theatrical performance (live or recorded) with the director, designer, or playwright.

B3.3 Create a product which assesses professional theater, film, and video performance products using the vocabulary of theater, such as genre, style, acting values, theme, and design.

B4.0 Apply choreographic principles, processes, and skills to create and communicate meaning through improvisation, composition, and performance of dance for a variety of professional applications.

B4.1 Specify applications of VPA Creative Expression Standards for Dance at the proficient level.

B4.2 Notate dances using a variety of systems (Labanotation, motif writing, and personal systems).

B4.3 Apply basic music elements (rhythm, meter, tempo, timbre) to construct and perform dances for a variety of professional settings.

B4.4 Create a dance that utilizes an established dance style or genre in response to an industry-specific prompt.

B4.5 Perform works by various dance artists communicating the original intent of the work while employing personal artistic intent and interpretation.

B4.6 Perform combinations, in response to audition requirements, in a variety of professional dance genres that demonstrate proficiency relative to industry expectations.

B4.7 Create a diverse body of work in dance, which demonstrates originality, unity, clarity of intent, and a dynamic range of movement appropriate to a variety of professional applications.

B4.8 Create a performance piece using dance structures, musical forms, theatrical elements, and technology for a specific professional application.

B4.9 Perform original works that employ personal artistic intent and respond to industry-specific criteria.

B5.0 Apply vocal and/or instrumental skill and knowledge to perform a varied repertoire of music appropriate to music industry application.

B5.1 Sing or play a repertoire of musical literature representing various genres, styles, and cultures with expression and technical accuracy.

B5.2 Sing or play music written in multiple parts, individually or with a group.

B5.3 Sight read and perform a brief musical composition from a professional resource.

B5.4 Employ a variety of music technology to record, integrate, or modify a live or recorded performance to produce a new artistic product.

B5.5 Compose music in distinct styles.

B5.6 Compose and arrange music for various combinations of voice and acoustic and digital/electronic instruments using appropriate ranges and traditional and nontraditional sound sources.

B5.7 Create melodic and rhythmic improvisations in a style or genre within a musical culture (gamelan, jazz, and mariachi).

B6.0 Apply skill and knowledge in acting, directing, design, and composition to create formal and informal (improvised) theater, film, video, and electronic media performances.

B6.1 Demonstrate media appropriate acting choices using script analysis, character research, reflection, and revision in live and recorded performance applications.

B6.2 Use acting choices, such as script analysis, character research, reflection, and revision; and apply to a variety of professional settings.

B6.3 Create performance products applying basic dramatic structure: exposition, complication, conflict, crises, climax, and resolution.

B6.4 Design, produce, or perform scenes applicable to a variety of professional settings and media applications.

B6.5 Improvise or write dialogues and scenes applying basic dramatic structure (exposition, complication, crises, climax, and resolution) appropriate to a variety of industry settings.

B6.6 Work collaboratively as designer, producer, or actor to meet directorial goals in scenes and plays from a variety of professional sources.

B7.0 Analyze the historical and cultural perspective of multiple industry performance products from a discipline-specific perspective.

B7.1 Identify and compare how film, theater, television, and electronic media productions influence values and behaviors.

B7.2 Analyze the historical and cultural perspective of the dancer in the professional setting.

B7.3 Analyze the historical and cultural perspective of the musician in the professional setting.

B7.4 Analyze the historical and cultural perspective of the actor and performance artist in the professional setting.

B7.5 Create a product comparing and contrasting universal themes and sociopolitical issues in a variety of music, dance, or theatrical products.

B8.0 Deconstruct the aesthetic values that drive professional performance and the artistic elements necessary for industry production.

- B8.1 Critique discipline-specific professional works using the language and terminology specific to the discipline.
- B8.2 Use selected criteria to compare, contrast, and assess various professional performance forms.
- B8.3 Analyze the aesthetic principles that apply in a professional work designed for live performance, film, video, or live broadcast.
- B8.4 Use complex evaluation criteria and terminology to compare and contrast a variety of genres of professional performance products.

B9.0 Explore the connection between artistic preparation and professional standards and practices.

- B9.1 Examine the training, education, and experience needed to pursue discipline-specific performance options.
- B9.2 Demonstrate effective knowledge and skills with the audiovisual equipment and technology used in professional performance.
- B9.3 Demonstrate entry-level competencies for a career in an artistic or technical field in the theatrical arts.
- B9.4 Understand the technical aspects of lights, sound, properties, costumes, and makeup from the perspective of the professional performer.
- B9.5 Contrast differing roles in professional skill sets of creators, performers, and others involved in the production and presentation of the performing arts.
- B9.6 Create a career plan leading to professional performance in one of the performance disciplines.

C. Production and Managerial Arts Pathway

Whatever the form or medium of creative expression, all careers in the Arts, Media, and Entertainment sector require "publication" or a public presentation in one way or another. Consequently, the Production and Managerial Arts pathway focuses on both the technical skills and the organizational and managerial knowledge necessary to bring arts, media, and entertainment to the public.

Sample occupations associated with this pathway:

- Event Planner
- Producers/Directors for Theater, Television, Concerts, and Motion Picture
- Stage Manager/Production Manager
- Talent Management
- Theatrical and Broadcast Technician

C1.0 Demonstrate knowledge of industry safety standards and practices in all areas of technical production.

- C1.1 Demonstrate understanding of various power tools used in construction and rigging.
- C1.2 Demonstrate knowledge of basic electrical safety.
- C1.3 Demonstrate understanding of safe workplace practices, including tool safety, rigging, electrical, and construction safety and awareness of hazardous materials in the workplace.
- C1.4 Apply safety related decision making and problem-solving techniques to live, recorded, or multimedia generated production.

C2.0 Understand the technical support functions and artistic competencies in film, video, and live production.

- C2.1 Analyze the production sequence involved in creating a media based or live performance production.
- C2.2 Produce a production flow chart for a live theatrical or media based production.
- C2.3 Plan one technical component of a production from design to performance.

C3.0 Analyze and differentiate the function of the various members of a production team.

- C3.1 Identify the skills and competencies of the various members of a production team including producer, production manager, director, assistant director, stage manager, production designer(s), post production, etc.

C4.0 Demonstrate key skills and an understanding of the complexities of production planning.

- C4.1 Know the main elements and functional responsibilities involved in the production and presentation of the performing, visual, and media arts.

C4.2 Know how artistic processes, organizational structure, and business principles, including funding and budgeting, are interrelated in both live and media production.

C4.3 Identify the responsibilities and activities associated with the preproduction, production, and post-production of a creative project.

C4.4 Demonstrate understanding of the appropriate use of technology in each phase of the production planning.

C4.5 Create a call sheet for equipment, crew, technical support, and cast requirements for an arts, media, and entertainment production.

C5.0 Apply knowledge of services, equipment capabilities, the workflow process, data acquisition, and technology to a timely completion of projects.

C5.1 Identify essential qualifications and technological competencies for each team member, including artists, designers, performers, composers, writers, and technicians.

C5.2 Plan the general coordination of various elements in a project or production.

C6.0 Understand the key elements of developing and promoting a production from creation to distribution.

C6.1 Design a production flow chart identifying chain of responsibility for a specific type of arts, media, and entertainment production.

C6.2 Create a budget for an aspect of an arts, media, and entertainment production of the arts, media, and entertainment industry.

C6.3 Design a promotional packet demonstrating knowledge of promotional

C6.4 Create a promotional example using electronic media.

C6.5 Create a public service announcement using two or more production methods materials, such as standard public service announcements

C7.0 Know various media production, communication, and dissemination techniques and methods, including written, oral, visual, and electronic media.

C7.1 Identify and describe licensing management for live and media based productions and intellectual properties.

C7.2 Identify successful business models and analyze various facets of those models, such as market analysis, marketing strategy, and product value.

C7.3 Discuss the relationships between publishers, developers, distributors, marketers, and retailers.

C7.4 Understand the role of audience and market research in promotional planning

C7.5 Understand the components of marketing campaigns for live and media based productions, including advertising in both traditional and social media.

C7.6 Demonstrate understanding of the distribution component of both live and media based production including Web, print, radio, television, and communication based options.

D. Game Design and Integration Pathway

Students who follow the Game Design and Integration pathway prepare for careers within the game design industry and in related technical fields. Students will develop foundational knowledge in game design, animation, graphics, and computer software and hardware. They will apply skills in Mathematics, Physics, English Language Arts, Social Science, and Entrepreneurship. Most importantly, students will learn the twenty-first century skills of creativity, critical thinking, communication, collaboration, and technical expertise, which will increase employment capacity across the job market. In the Game Design and Integration Pathway students prepare for both entry-level employment and additional postsecondary training needed for advancement in the highly competitive game design industry. They prepare for occupations such as Game Tester/Analyst, 2-D and 3-D Animator, Storyboard, Level Artist, Texture Artist, Cinematic Artist, Game Designer, Game Programmer, and Production Team Manager. Students completing this pathway develop the skills and knowledge to be creative partners in video game design while building capacity for employment in all areas of the creative workforce.

Sample occupations associated with this pathway:

- 2-D/3-D Animator
- Computer Game Designer/Developer
- Electronic Simulation Consultant

D1.0 Demonstrate understanding of current trends and the historical significance of both electronic and non-electronic games. Students will analyze different game systems and identify how these systems have influenced consumer technology.

- D1.1 Research and analyze different game genres, including multiplayer games.
- D1.2 Define and use necessary vocabulary related to games, their genres, game platforms, and game hardware.
- D1.3 Research, compare, and categorize different game platforms and game hardware.
- D1.4 Analyze the technology transfer from video games to other industries, such as education, medical, corporate training, and military simulation.
- D1.5 Present a mock-up of a future generation game platform and hardware system based on research of current and emerging technologies and future predictions.

D2.0 Analyze the core tasks and challenges of video game design and explore the methods used to create and sustain player immersion.

- D2.1 Identify and define the roles and responsibilities of each member of a video game design team.
- D2.2 Break down and identify the fundamental building blocks of game play: player goals, player actions, rewards, and challenges.

D2.3 Research various input controls and display types then identify how these impact game play.

D2.4 Research and define the term "player immersion."

D2.5 Explore and explain the factors that create player immersion in a game.

D2.6 Compare and contrast player-centric design and designer-centric design in video games.

D2.7 Describe a designer-centric game to highlighting features other than game play and entertainment value.

D2.8 Prototype a small game using real-world objects, such as dice, cards, balls, pen and paper, etc.

D3.0 Acquire and apply appropriate game programming concepts and skills to develop a playable video game.

D3.1 Implement common programming concepts, including logic operators, conditional statements, loops, variables, events, actions, and handling user input.

D3.2 Understand the basics of game physics, including collision and motion.

D3.3 Examine the use of math and physics (such as gravity and friction) in game development.

D3.4 Explore the basics of random number generation.

D3.5 Implement a small video game utilizing mathematics and physics that features at least one moving object (such as a spaceship) which rotates along an axis and moves in whichever direction it is facing after rotation. The game must include collision physics.

D4.0 Students will demonstrate mastery of game art and multimedia, including music, sound, art, and animation.

D4.1 Demonstrate understanding of the elements of art, including line, shape, color, value, texture, space, and balance, to set the mood and feel of a scene.

D4.2 Research and describe the different perspectives used in video games, including first person, second person, and third person perspectives.

D4.3 Explain how to create the illusion of 3-D in a 2-D environment.

D4.4 Create 2-D art and 3-D models.

D4.5 Create an animation sequence.

D4.6 Design a game environment using lines, fills, and color to set a specific mood and feel of a scene.

D4.7 Create, record, and edit audio for a game.

D4.8 Define and discuss intellectual property, copyrights, trademarks, and piracy as they relate to art and multimedia assets in a game.

D4.9 Understand the basics of character design and development, world design, and level design.

D4.10 Create a storyboard for a game cut-scene applying the basic principles of design and concepts of cinematography.

D5.0 Demonstrate an understanding of testing techniques used to evaluate, assess, rate, and review quality assurance of video games.

- D5.1 Test and analyze games to determine the quality of rules, interfaces, navigation, performance, and game play.
- D5.2 Identify the key elements in a game and make intelligent judgments about whether the game succeeded or failed in its objectives.
- D5.3 Compare and contrast the differences between functionality and usability of software.
- D5.4 Evaluate games in terms of accessibility issues.
- D5.5 Demonstrate technical reading and writing skills.
- D5.6 Test a classmate's game project and create a bug report for the game. For each error submitted, write steps in sufficient detail so it is identifiable and reproducible to the developer. Use a metric to identify how critical the error is based on its negative impact on game play.

D6.0 Understand the general procedures, documentation, and requirements of large scale game design projects. Examine and categorize the significant processes in the production of games.

- D6.1 Identify processes of design and development from concept to production, including content creation, filling team roles, design documentation, communication, and scheduling for video game design teams.
- D6.2 Discuss the iterative nature of game and simulation design.
- D6.3 Develop design plans, character sketches, documentation, and storyboards for proposed games.
- D6.4 Enumerate individual tasks of a project using basic time management skills to complete each task and track its completion.
- D6.5 Describe the importance and interrelationship between development schedule and budget constraints in a video game design project.
- D6.6 Compare and contrast common uses of different game development tools.
- D6.7 Create a set of original design documents and build a small game.

D7.0 Understand the fundamentals of business and marketing, including entrepreneurship, global marketing, and localization.

- D7.1 Identify, define, and discuss the different ways games are funded, distributed, marketed, and sold.
- D7.2 Identify and describe licensing management for different game platforms, tools, and intellectual properties.
- D7.3 Identify successful business models and analyze various facets of those models, such as market analysis, marketing strategy, and product value.
- D7.4 Understand the components of marketing campaigns for games, including advertising in traditional and social media.
- D7.5 Understand the role community management plays in marketing and business models.

D7.6 Discuss the relationships between publishers, developers, distributors, marketers, and retailers.

D7.7 Evaluate game journalism and professional reviews in terms of bias.

D7.8 Explore and describe the effects of globalization on the design and production of video games.

D7.9 Evaluate how video games adhere to government rating systems.

D7.10 Create a plan for a game to target a specific audience within three different countries while adhering to their governments' rating systems.

D8.0 Understand the impact of games and the role of play in human culture. Analyze the ethics and global impact of the game industry.

D8.1 Discuss the word "play" and its many definitions.

D8.2 Investigate and discuss how play can help humans acquire knowledge and social skills.

D8.3 Describe the benefits of games and simulations, including online economies and community building.

D8.4 Compare and contrast the different opinions on the effects of games on behavior, cognitive development, and motor skills.

D8.5 Describe how frequent exposure and/or access to video games has reshaped the level of technical proficiency of our workforce.

D8.6 Explore and discuss the impact of video games on the economy.

D8.7 Design a game you believe will have positive impact on the world.

D9.0 Identify career goals and develop a career plan that explores employment opportunities in the video game industry.

D9.1 Demonstrate personal and interpersonal skills appropriate for the workplace, such as responsibility, dependability, punctuality, positive attitude, initiative, respect for self and others, and professional dress.

D9.2 Investigate how the skills acquired in game design/development can be applied to other industries.

D9.3 Use personal assessment tools to identify personal and professional strengths and weaknesses.

D9.4 Analyze job and career requirements as related to career interests and opportunities in the game industry.

D9.5 Investigate the common employment contracts in the game industry, such as Nondisclosure Agreements, "Work for Hire" agreements, and "Noncompete" clauses.

D9.6 Create a resume and use it during a mock interview. At the end of the interview process, apply negotiation skills as they relate to salary and benefits packages.

D10.0 Students will build a game that demonstrates teamwork and project management by creating a game design production plan that describes the game play, outcomes, controls, rewards, interface, and artistic style of a video game.

- D10.1 Use design documents to create a game design production plan.
- D10.2 Solicit and accept constructive criticism.
- D10.3 Use computer tools to create game programming, art, and audio.
- D10.4 Create and use animated objects in a game.
- D10.5 Create sound and music to enhance the game experience.
- D10.6 Test and debug the completed game.
- D10.7 Apply listening, speaking, and collaborative communication skills to effectively convey information.
- D10.8 Demonstrate a professional level of written and oral communication as necessary in the game industry.

Academic Alignment Matrix

ARTS, MEDIA, AND ENTERTAINMENT	PATHWAYS			
	A. Design, Visual, and Media Arts	B. Performing Arts	C. Production and Managerial Arts	D. Game Design and Integration
ENGLISH LANGUAGE ARTS				
Language Standards – LS (Standard Area, Grade Level, Standard #)				
11-12.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D2.0, D4.0, D5.0, D6.0, D7.0, D8.0, D9.0
11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D2.0, D4.0, D5.0, D6.0, D7.0, D8.0, D9.0
11-12.3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D4.0, D7.0, D8.0
11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 11–12 reading and content*, choosing flexibly from a range of strategies.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D2.0, D4.0, D6.0, D7.0, D8.0
11-12.5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D2.0, D4.0, D6.0, D7.0, D8.0, D9.0
11-12.6. Acquire and accurately use general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D2.0, D4.0, D5.0, D6.0, D7.0, D8.0, D9.0
Reading Standards for Literature – RSL (Standard Area, Grade Level, Standard #)				
11-12.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	A6.0, A7.0	B3.0, B6.0		D4.0, D6.0, D8.0, D9.0
11-12.2. Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.	A6.0, A7.0	B3.0, B6.0		D1.0, D4.0, D8.0

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Reading Standards for Literature – RSL (Standard Area, Grade Level, Standard #) *(continued)*				
11-12.3. Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters/archetypes are introduced and developed).	A6.0, A7.0	B3.0, B6.0		D4.0, D8.0
11-12.4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful.	A6.0, A7.0	B3.0, B6.0		D4.0, D8.0
11-12.5. Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.	A6.0, A7.0	B3.0, B6.0		D4.0, D6.0, D7.0, D8.0
11-12.6 Analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).	A6.0, A7.0	B3.0, B6.0		D7.0
11-12.7. Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.).	A6.0, A7.0	B3.0, B6.0		D4.0, D6.0, D8.0
11-12.9 Demonstrate knowledge of eighteenth-, nineteenth- and twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.	A6.0, A7.0	B3.0, B6.0		D8.0
11-12.10 by the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11-CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11-CCR text complexity band independently and proficiently.	A6.0, A7.0	B3.0, B6.0		D4.0, D8.0

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ARTS, MEDIA, AND ENTERTAINMENT	PATHWAYS			
	A. Design, Visual, and Media Arts	B. Performing Arts	C. Production and Managerial Arts	D. Game Design and Integration
Reading Standards for Informational Text – RSIT (Standard Area, Grade Level, Standard #)				
11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D4.0, D7.0
11-12.2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D4.0
11-12.3. Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D4.0
11-12.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10). (See grade 11/12 Language standards 4-6 on page 46 for additional expectations.)	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D2.0, D4.0, D8.0, D9.0
11-12.5. Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0			D7.0, D8.0, D9.0
11-12.6. Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0			D7.0
11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D4.0, D8.0, D9.0
11-12.8. Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., *The Federalist,* presidential addresses).				D7.0, D8.0, D9.0

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Reading Standards for Literacy in History/Social Studies – RHSS (Standard Area, Grade Level, Standard #)				
11-12.1. Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.	A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B7.0, B8.0	C7.0	D1.0, D4.0, D8.0
11-12.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.	A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B7.0, B8.0	C7.0	D1.0, D7.0, D8.0
11-12.3. Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves mattes uncertain.	A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B7.0, B8.0	C7.0	D4.0
11-12.4. Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines faction in Federalist No. 10).	A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B7.0, B8.0	C7.0	D4.0, D8.0
11-12.5. Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.	A2.0, A3.0, A4.0, A5.0, A6.0	B7.0	C7.0	D1.0, D4.0, D6.0, D7.0, D8.0
11-12.6. Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.	A2.0, A3.0, A4.0, A5.0, A6.0	B7.0		D1.0, D8.0
11-12.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.	A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B7.0, B8.0	C7.0	D1.0, D2.0, D4.0, D5.0, D8.0, D9.0
11-12.8. Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.	A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B7.0, B8.0	C7.0	D1.0, D4.0, D7.0, D8.0
11-12.9 Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.	A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B7.0, B8.0	C7.0	D1.0, D8.0

Academic Alignment Matrix

ARTS, MEDIA, AND ENTERTAINMENT	PATHWAYS			
	A. Design, Visual, and Media Arts	B. Performing Arts	C. Production and Managerial Arts	D. Game Design and Integration
Reading Standards for Literacy in Science and Technical Subjects – RLST (Standard Area, Grade Level, Standard #)				
11-12.1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes to any gaps or inconsistencies in the account.	A1.0, A2.0, A5.0, A8.0	B4.0, B5.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C7.0	D1.0, D7.0, D8.0
11-12.2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.	A1.0, A2.0, A5.0, A8.0	B4.0, B5.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C7.0	D1.0, D2.0, D4.0, D8.0
11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.	A1.0, A2.0, A5.0, A8.0	B4.0, B5.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C7.0	D3.0, D5.0, D10.0
11-12.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.	A1.0, A2.0, A5.0, A8.0	B4.0, B5.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C7.0	D3.0, D5.0, D6.0
11-12.5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.	A1.0, A2.0, A5.0, A8.0	B4.0, B5.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C7.0	D3.0, D5.0, D7.0
11-12.6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.	A1.0, A2.0, A5.0, A8.0	B4.0, B5.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C7.0	D5.0, D6.0
11-12.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.	A1.0, A2.0, A5.0, A8.0	B4.0, B5.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C7.0	D1.0, D2.0, D3.0, D4.0, D5.0, D6.0
11-12.8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.	A1.0, A2.0, A5.0, A8.0	B4.0, B5.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C7.0	D2.0, D3.0, D5.0
11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	A1.0, A2.0, A5.0, A8.0	B4.0, B5.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C7.0	D4.0, D5.0, D6.0, D7.0, D8.0
11-12.10. By the end of grade 12, read and comprehend science/technical texts in the grades 11-12 text complexity band independently and proficiently.	A1.0, A2.0, A5.0, A8.0	B4.0, B5.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C7.0	D3.0, D5.0, D6.0, D7.0, D8.0

Academic Alignment Matrix

ARTS, MEDIA, AND ENTERTAINMENT	PATHWAYS			
	A. Design, Visual, and Media Arts	B. Performing Arts	C. Production and Managerial Arts	D. Game Design and Integration
Writing Standards – WS (Standard Area, Grade Level, Standard #)				
11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D4.0, D7.0, D8.0
11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D8.0
11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D4.0, D7.0, D8.0, D9.0
11-12.5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D8.0, D9.0
11-12.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D2.0, D3.0, D4.0, D5.0, D6.0, D7.0, D8.0, D9.0, D10.0
11-12.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D2.0, D5.0, D8.0
11-12.8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation including footnotes and endnotes.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D6.0, D8.0
11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D8.0,

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	A. Design, Visual, and Media Arts	B. Performing Arts	C. Production and Managerial Arts	D. Game Design and Integration
Writing Standards – WS (Standard Area, Grade Level, Standard #) *(continued)*				
11-12.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0	D1.0, D6.0, D8.0
Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects – WHSST				
11-12.1. Write arguments focused on discipline-specific content.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B6.0, B7.0, B8.0	C1.0, C2.0, C4.0, C5.0	D8.0
11-12.2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B6.0, B7.0, B8.0	C1.0, C2.0, C4.0, C5.0	D5.0, D7.0, D8.0
11-12.3. Incorporate narrative elements effectively into arguments and informative/ explanatory texts.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B6.0, B7.0, B8.0	C1.0, C2.0, C4.0, C5.0	D2.0, D5.0, D7.0, D8.0
11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate tot task, purpose, and audience.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B6.0, B7.0, B8.0	C1.0, C2.0, C4.0, C5.0	D1.0, D2.0, D4.0, D6.0, D7.0, D8.0
11-12.5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B6.0, B7.0, B8.0	C1.0, C2.0, C4.0, C5.0	D1.0, D5.0, D8.0, D9.0
11-12.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B6.0, B7.0, B8.0	C1.0, C2.0, C4.0, C5.0	D1.0, D5.0, D6.0, D8.0, D9.0, D10.0
11-12.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B6.0, B7.0, B8.0	C1.0, C2.0, C4.0, C5.0	D1.0, D4.0, D7.0, D8.0

Academic Alignment Matrix

ARTS, MEDIA, AND ENTERTAINMENT	PATHWAYS			
	A. Design, Visual, and Media Arts	B. Performing Arts	C. Production and Managerial Arts	D. Game Design and Integration
Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects – WHSST *(continued)*				
11-12.8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B6.0, B7.0, B8.0	C1.0, C2.0, C4.0, C5.0	D10.0
11-12.9. Draw evidence from informational texts to support analysis, reflection, and research.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B6.0, B7.0, B8.0	C1.0, C2.0, C4.0, C5.0	D1.0, D8.0
11-12.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B6.0, B7.0, B8.0		
MATHEMATICS				
Algebra – A-SSE – Seeing Structure in Expressions				
Interpret the structure of expressions 1. Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on* P.		B4.0, B5.0		D3.0, D5.0, D6.0, D10.0
2.1 Apply basic factoring techniques to second- and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials. (CA Standard Algebra I - 11.0)				D3.0

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Algebra – A-SSE – Seeing Structure in Expressions *(continued)*				
Write expressions in equivalent forms to solve problems				
3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* a. Factor a quadratic expression to reveal the zeros of the function it defines. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. c. Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15^t can be rewritten as $(1.15^{1/12})12^T = 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%. d. Prove simple laws of logarithms. (CA Standard Algebra II - 11.0) e. Use the definition of logarithms to translate between logarithms in any base. (CA Standard Algebra II - 13.0) f. Understand and use the properties of logarithms to simplify logarithmic numeric expressions and to identify their approximate values. (CA Standard Algebra 11- 14.0)				D3.0, D5.0
4. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments.		B9.0		D3.0
Algebra – A-CED – Creating Equations				
Create equations that describe numbers or relationships				
1. Create equations and inequalities in one variable including ones with absolute value and use them to solve problems in and out of context, including equations arising from linear functions. 1.1 Judge the validity of an argument according to whether the properties of real numbers, exponents, and logarithms have been applied correctly at each step. (CA Standard Algebra II - 11.2)	A1.0			

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	A. Design, Visual, and Media Arts	B. Performing Arts	C. Production and Managerial Arts	D. Game Design and Integration
Algebra – A-CED – Creating Equations *(continued)*				
2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	A1.0			
3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.	A1.0			
4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.	A1.0			
Functions – F-IF – Interpreting Functions				
Understand the concept of a function and use function notation				
1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then *f(x)* denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = *f(x)*.	A3.0	B2.0, B9.0	C1.0	D3.0
2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	A3.0	B2.0, B4.0	D3.0	
3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) +f(n-1)for n ≥ 1.	A3.0	B2.0, B4.0	D3.0, D10.0	
Interpret functions that arise in applications in terms of the context				
4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.	A3.0, A5.0, A8.0	B2.0, B4.0		D3.0, D10.0

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Functions – F-IF – Interpreting Functions *(continued)*				
5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.	A8.0	B2.0, B4.0		D3.0, D6.0, D10.0
6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	A8.0	B2.0, B4.0		D3.0, D10.0
Functions – F-LE – Linear, Quadratic, and Exponential Models				
1. Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	A1.0, A2.0			D3.0, D5.0, D10.0
2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	A2.0			D3.0, D5.0, D10.0
3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	A2.0			D3.0, D5.0, D7.0, D10.0
Geometry – G-CO – Congruence				
Experiment with transformations in the plane				
1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	A4.0		C2.0, C4.0	D3.0, D10.0

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Geometry – G-CO – Congruence *(continued)*				
2. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take paints in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	A4.0		C2.0, C4.0	
4. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	A4.0	B3.0	C2.0, C4.0	D3.0, D10.0
Geometry – G-GMD – Geometric Measurement and Dimensions				
Explain volume formulas and use them to solve problems				
1. Give an informal argument for the formulas for the circumference of a Circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.		B3.0	C1.0	
2. (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.		B3.0	C1.0	
3. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.			C1.0	
Visualize relationships between two-dimensional and three-dimensional objects			C1.0	
4. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three dimensional objects generated by rotations of two-dimensional objects.	A2.0	B3.0	C1.0	
5. Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.	A2.0		C1.0	
Geometry – G-MG – Modeling with Geometry				
Apply geometric concepts in modeling situations				
1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).	A2.0, A8.0	B1.0, B6.0, B8.0	C6.0	D3.0, D4.0, D10.0

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ARTS, MEDIA, AND ENTERTAINMENT	PATHWAYS			
	A. Design, Visual, and Media Arts	B. Performing Arts	C. Production and Managerial Arts	D. Game Design and Integration
Geometry – G-MG – Modeling with Geometry *(continued)*				
2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).	A8.0	B1.0, B6.0, B8.0	C6.0	
3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).	A1.0, A8.0	B1.0, B6.0, B8.0	C6.0	D3.0, D4.0, D10.0
Geometry – G-SRT – Similarity, Right Triangles, and Trigonometry				
Understand similarity in terms of similarity transformations				
1. Verify experimentally the properties of dilations given by a center and a scale factor: a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. b. The dilation of a line segment is longer or shorter in the ratio given the scale factor.			C1.0	
Prove theorems involving similarity				
4. Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.			C1.0	
5. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.		B2.0	C1.0	D3.0, D10.0
Apply trigonometry to general triangles				
9. (+) Derive the formula A = 1/2 ab sin(C} for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.			C1.0	
10. (+) Prove the Laws of Sines and Cosines and use them to solve problems.			C1.0	D3.0, D10.0
11. (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).			C1.0	D3.0, D10.0

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ARTS, MEDIA, AND ENTERTAINMENT	PATHWAYS			
	A. Design, Visual, and Media Arts	B. Performing Arts	C. Production and Managerial Arts	D. Game Design and Integration
Statistics and Probability – S-ID – Interpreting Categorical and Quantitative Data				
Summarize, represent, and interpret data on a single count or measurement variable				
1. Represent data with plots on the real number line (dot plots, histograms, and box plots).	A7.0	B8.0	C5.0	D3.0, D7.0
2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	A7.0	B8.0	C5.0	D6.0, D7.0
3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	A7.0	B8.0	C5.0	D7.0
4. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	A7.0		C5.0	D6.0, D7.0
Summarize, represent, and interpret data on two categorical and quantitative variables				
5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	A7.0	B8.0	C5.0	D6.0
6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association.	A7.0		C5.0	

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Statistics and Probability – S-MD – Using Probability to Make Decisions				
Calculate expected values and use them to solve problems				
1. (+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.			C1.0, C6.0	D3.0
2. (+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.			C1.0	D3.0
3. (+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.			C1.0	
4. (+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?			C1.0	
Use probability to evaluate outcomes of decisions				
5. (+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values. a. Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant. b. Evaluate and compare strategies on the basis of expected values. For example, compare a high deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.	A7.0		C1.0, C6.0	
6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).			C1.0	
7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).			C1.0	

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SCIENCE				
Scientific and Engineering Practices – SEP				
1. Asking questions (for science) and defining problems (for engineering)	A1.0, A5.0		C1.0, C5.0	D3.0, D6.0, D7.0
2. Developing and using models	A2.0, A3.0, A7.0, A8.0			D3.0, D6.0, D7.0, D10.0
3. Planning and carrying out investigations	A4.0, A5.0			
4. Analyzing and interpreting data	A4.0, A8.0	B7.0	C2.0, C3.0, C5.0	D3.0, D5.0, D6.0, D7.0, D10.0
5. Using mathematics and computational thinking	A2.0, A7.0, A8.0		C6.0	D3.0, D5.0, D6.0, DE7.0
6. Constructing explanations (for science) and designing solutions (for engineering)	A2.0, A8.0	B8.0		D1.0, D3.0, D5.0, D6.0
7. Engaging in argument from evidence		B8.0	C1.0, C7.0	D3.0, D5.0, D6.0, D7.0, D8.0, D10.0
8. Obtaining, evaluating, and communicating information	A1.0, A4.0	B8.0	C1.0, C7.0	
Crosscutting Concept – CC				
1. Patterns	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C4.0	
Physical Sciences – PS				
PS1: Matter and Its Interactions				D3.0, D10.0
PS1.A: Structure and Properties of Matter	A1.0			D3.0, D10.0
PS2: Motion and Stability: Forces and Interactions				
PS2.A: Forces and Motion		B1.0, B5.0, B7.0	C1.0	D3.0
PS2.B: Types of interactions		B2.0, B5.0, B6.0, B7.0	C1.0, C5.0	

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ARTS, MEDIA, AND ENTERTAINMENT	PATHWAYS			
	A. Design, Visual, and Media Arts	B. Performing Arts	C. Production and Managerial Arts	D. Game Design and Integration
Physical Sciences – PS *(continued)*				
PS2.C: Stability and Instability in Physical Systems	A1.0, A2.0	B1.0, B5.0, B7.0, B8.0	C1.0	
PS3: Energy				
PS3.A: Definitions of Energy			C1.0	
PS3.B: Conservation of Energy and Energy Transfer			C1.0, C4.0	D3.0
PS3.C: Relationship Between Energy and Forces			C1.0	D3.0, D5.0, D10.0
PS4: Waves and Their Applications in Technologies for Information Transfer				
PS4.C: Information Technologies and Instrumentation	A1.0, A2.0, A3.0, A5.0, A7.0, A8.0	B6.0	C5.0, C7.0	D2.0, D3.0, D5.0, D10.0
Life Sciences – LS				
LS1: From Molecules to Organisms: Structures and Processes				
LS1.A: Structure and Function	A1.0	B1.0	C1.0, C3.0	
LS1.B: Growth and Development of Organisms				
LS1.C: Organization for Matter and Energy Flow in Organisms	A2.0		C2.0	
LS1.D: Information Processing	A1.0			
LS2: Ecosystems: Interactions, Energy, and Dynamics				
LS2.A: Interdependent Relationships in Ecosystems	A4.0		C1.0, C5.0	
LS2.D: Social Interactions and Group Behavior		B1.0	C5.0	
LS4: Biological Evolution: Unity and Diversity				
LS4.A: Evidence of Common Ancestry and Diversity	A3.0			
LS4.B: Natural Selection	A3.0, A5.0			
LS4.C: Adaptation				
LS4.D: Biodiversity and Humans	A1.0	B1.0, B4.0, B5.0		

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Engineering, Technology, and the Applications of Science – ETS				
ETS1: Engineering Design				
ETS1.A: Defining and Delimiting an Engineering Problem	A2.0, A3.0, A4.0, A5.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0	C1.0, C2.0	D3.0, D5.0, D10.0
ETS1.B: Developing Possible Solutions	A2.0, A3.0, A4.0, A5.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0	C1.0, C2.0	D5.0, D10.0
ETS1.C: Optimizing the Design Solution	A2.0, A3.0, A4.0, A5.0, A7.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0	C1.0, C2.0	D10.0
ETS2: Links Among Engineering, Technology, Science, and Society				
ETS2.A: Interdependence of Science, Engineering, and Technology	A2.0, A3.0, A4.0, A5.0, A7.0, A8.0	B2.0, B3.0, B.5.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C5.0, C7.0	D1.0, D3.0, D5.0, D7.0, D10.0
ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World	A1.0, A2.0, A3.0, A4.0, A5.0, A7.0, A8.0	B2.0, B3.0, B5.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C5.0, C7.0	D1.0, D10.0
HISTORY/SOCIAL SCIENCE				
Principles of American Democracy and Economics – AD				
12.8 Students evaluate and take and defend positions on the influence of the media on American political life.	A1.0, A2.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0	C7.0	D1.0, D7.0, D8.0
12.8.2. Describe the roles of broadcast, print, and electronic media, including the Internet, as means of communication in American politics.	A3.0			
12.10 Students formulate questions about and defend their analyses of tensions within our constitutional democracy and the importance of maintaining a balance between the following concepts: majority rule and individual rights; liberty and equality; state and national authority in a federal system; civil disobedience and the rule of law; freedom of the press and the right to a fair trial; the relationship of religion and government.	A1.0, A2.0, A3.0, A8.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0	C7.0	

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Principles of Economics – PE				
12.1 Students understand common economic terms and concepts and economic reasoning.	A5.0			D6.0, D7.0
12.2 Students analyze the elements of America's market economy in a global setting.	A5.0			D1.0, D6.0, D7.0
12.2.1. Understand the relationship of the concept of incentives to the law of supply and the relationship of the concept of incentives and substitutes to the law of demand.				D7.0
12.2.2. Discuss the effects of changes in supply and/or demand on the relative scarcity, price, and quantity of particular products.				D7.0
12.2.7. Analyze how domestic and international competition in a market economy affects goods and services produced and the quality, quantity, and price of those products.				D7.0
12.3 Students analyze the influence of the federal government on the American economy.	A5.0			D6.0
12.4 Students analyze the elements of the U.S. labor market in a global setting.	A5.0			D1.0, D7.0
12.4.2. Describe the current economy and labor market, including the types of goods and services produced, the types of skills workers need, the effects of rapid technological change, and the impact of international competition.				D7.0
12.6 Students analyze issues of international trade and explain how the U.S. economy affects, and is affected by, economic forces beyond the United States' borders.	A5.0			D1.0, D7.0
U.S. History and Geography – US				
11.5 Students analyze the major political, social, economic, technological, and cultural developments of the 1920s.	A3.0, A6.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0	C2.0, C5.0, C7.0	D1.0
11.5.2. Analyze the international and domestic events, interests, and philosophies that prompted attacks on civil liberties, including the Palmer Raids, Marcus Garvey's "back-to-Africa" movement, the Ku Klux Klan, and immigration quotas and the responses of organizations such as the American Civil Liberties Union, the National Association for the Advancement of Colored People, and the Anti-Defamation League to those attacks.	A3.0			

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U.S. History and Geography – US *(continued)*				
11.5.5. Describe the Harlem Renaissance and new trends in literature, music, and art, with special attention to the work of writers (e.g., Zora Neale Hurston, Langston Hughes).	A3.0	B7.0		
11.5.6. Trace the growth and effects of radio and movies and their role in the worldwide diffusion of popular culture.	A3.0	B7.0		
11.8 Students analyze the economic boom and social transformation of post-World War II America.	A2.0, A3.0, A6.0, A8.0	B1.0, B2.0, B4.0, B5.0, B7.0, B8.0	C7.0	D1.0, D7.0
11.11 Students analyze the major social problems and domestic policy issues in contemporary American society.	A2.0, A3.0, A6.0, A8.0	B1.0, B4.0, B5.0, B6.0, B7.0, B8.0	C2.0, C5.0, C7.0	D1.0, D6.0, D7.0, D8.0
11.11.3. Describe the changing roles of women in society as reflected in the entry of more women into the labor force and the changing family structure.	A3.0			
World History, Culture, and Geography – WH				
10.3 Students analyze the effects of the Industrial Revolution in England, France, Germany, Japan, and the United States.	A3.0	B7.0		
10.6 Students analyze the effects of the First World War.	A3.0, A6.0	B1.0, B3.0, B4.0, B7.0		
10.8 Students analyze the causes and consequences of World War II.				
10.8.5. Analyze the Nazi policy of pursuing racial purity, especially against the European Jews; its transformation into the Final Solution; and the Holocaust that resulted in the murder of six million Jewish civilians.	A3.0			
10.11 Students analyze the integration of countries into the world economy and the information, technological, and communications revolutions (e.g., television, satellites, computers).	A2.0, A3.0, A8.0	B5.0, B6.0, B7.0	C1.0, C2.0, C5.0, C7.0	D1.0, D7.0, D8.0

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