



INTERACTIVE APPLICATION AND VIDEO GAME DEVELOPMENT



SkillsUSA Championships Technical Standards

PURPOSE

The Game Development & Innovation Challenge is an exciting competition that merges the fields of game development, design, and innovation, targeting the dynamic video game and interactive entertainment industry. In this challenge, participants demonstrate their skills across various game development aspects, including programming, graphic design, sound design, and storytelling. The focus is on creativity, technical ability, and understanding of market trends, with contestants required to create and present a playable game prototype. This prototype should be engaging, innovative, and technically proficient, reflecting current industry trends and consumer interests. The event offers a platform for aspiring game developers to showcase their talent and aligns with the global growth in digital entertainment and interactive media.

ELIGIBILITY (TEAM OF TWO)

Open to a team of two active SkillsUSA members enrolled in career and technical education programs with creating interactive applications and video game design and development as occupational objectives. Up to four additional students from the same school and program may assist the team if they are correctly credited per the instructions below under section 2 of “Equipment and Materials.”

CLOTHING REQUIREMENTS

Class E: Competition Specific — Business Casual

- ï Official School District Esports Logo Team Jersey or Polo Shirt
- ï Khaki Pants, Black dress slacks, or black dress skirt (knee-length minimum)
- ï White Sneakers or an approved unified school color shoe.

Note: Wearing socks or a hose is no longer required. If worn, socks must be a unified color.

Note: Competitors must wear their official competition clothing to the competition orientation meeting.

These regulations refer to clothing items that are pictured and described:

<https://www.unityprinting.com/BFG/>.

If you have questions about clothing or other logo items, call 1-800-364-8610.

Note: Wearing socks or a hose is no longer required. If worn, socks must be black dress socks, and the hose must be either black or skin-tone and seamless/nonpattern.

These regulations refer to clothing items that are pictured and described at

www.skillsusastore.org. If you have questions about clothing or other logo items, call 1-

888-501-2183.

Note: Competitors must wear their official competition clothing to the competition orientation meeting and on competition day.

Blaze Fire Games Esports Bus

About Blaze Fire Games

Visit us at: <https://blazefiregames.com/#/>

About Blaze Fire Games Esports Bus

<https://bfgesportsbus.com/about>

Blaze Fire Games Esports Bus Promo

<https://www.youtube.com/shorts/Ax9fBt2N5IU>

Contact

Blaze Fire Games

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EQUIPMENT AND MATERIALS

1. Supplied by the technical committee:
 - a. Space for team prototypes. Based on availability, each team will be allotted at least one six-foot (6') or one-half of an eight-foot (8') conference table and two chairs to share among team members.
 - b. Access to power
 - c. We have a written knowledge exam and pencils.
 - d. GameDevHQ will provide a competition laptop for each participating Competition Team.

Note: Internet access will be required.

2. Supplied by competitors:

Important: State and school identifiers, except the hard-copy affidavit and resumes, should not appear on competition submissions. At the competition orientation and set up/check-in, teams must turn in affidavits, resumes, a Design Document (DD), and two videos, as described below. Teams should also be prepared to show proof of licensing for all software used.

 - a. A working sample or prototype of an interactive application or video game (the Game), including all source files and any necessary software and hardware needed to demonstrate it. If different from the target playback platform, teams should also bring a computer capable of reading and displaying their prototype from their source files (for backup only).
 - b. A backboard, artwork, and collateral to enhance the prototype's display, presentation, and "marketing."
 - c. Two - 6' multiple-outlet power strips.
 - d. A loose-leaf affidavit signed by all team members on 8.5"x 11" paper, countersigned by their school's administrator and instructor or SkillsUSA advisor, states the team submission is original work created by the team members during the school year. Credits for students assisting in the project should be listed along with details on their work.
 - e. A **Design Document (DD)** organized into a single Adobe PDF file, formatted in 8.5" x 11", portrait orientation, using 12-point font and entitled "**DD – Team XXXX.**" The required sections of the DD, with section titles to be utilized in bold, are the following:
 - 1). A one-page type-written **Overview** describing the Game or interactive application, including the title, a summary, a description of the target audience, main selling points, any competitive or inspirational game titles, estimated total playtime, and measured performance metrics on the Game.
 - 2). A one-page **SWOT** analysis table listing the primary Strengths, Weaknesses, Opportunities, and Threats for the Game.
 - 3). Completed **Concept Artwork** or the storyboard used to develop the Game. Shrink to fit, if needed, and submit between four to six (4-6) pages max.
 - 4). **Code Examples** of the highest quality and complexity of programming developed for the Game, between two to four (2-4) pages, formatted in 8.5"x11." If a computer language was used, the code should be single-spaced in 12 pt. font. If visual programming was used, submit screen captures of visual programming diagrams.
 - f. Two video submissions

- 1). The first digital video should be three to four (3-4) minutes long and entitled. **“Intro Video - Team XXXX,”** where the competitors should introduce themselves and any students from their program who assisted them (by name only, careful not to reveal the team’s school or state), detailing each person’s role in the development process. Then, in the same video, one team member, acting as spokesperson, should give a quick overview of the game or interactive application, including its title, genre, target audience, how many levels, total approximate playtime developed, performance metrics, and any notable user interfaces (opening, closing screen, cut scenes, etc.).
 - 2). The second digital video should be thirty (30) seconds to one (1) minute long and entitled **“Trailer Video - Team XXXX,”** pitching the game or interactive application, demonstrating, and describing what is best about it, including gameplay, mechanics, significant objects or characters, levels, artwork, backgrounds, sound, with a focus on why the audience would want to play the Game. Think of this as an advertisement designed to drive player acquisition.
- g. All competitors must create a one-page resume to submit online. See “Resume Requirement” below for guidelines. Competitors must also bring a hard copy of their resume to the competition.

Note: The DD and digital videos should be tested in advance on WIN and MAC computers to ensure they are viewable on readers/players included with those operating systems.

Content may be submitted to other competitions or events. SkillsUSA’s photography and sound release will apply to using imagery and content from submissions for marketing and nonprofit outreach.

RESUME REQUIREMENT

Competitors must create a one-page resume to submit online. SkillsUSA national competitors should submit their resumes by the deadline published on the competition updates page of our website to info@aperionglobalinstitute.com

The deadline and link for resume submission will be posted on <http://updates.skillsusa.org>. Failure to submit a resume will result in a 10-point penalty.

Your resume must be saved as a PDF file using the file name format of “Last Name First Name.” For example, “John Hemby ” would keep her resume as **Hemby_John**. If you need assistance saving your file as a PDF, visit [the Adobe website](#) for more information.

Note: Check the Competition Guidelines and the updates page on the SkillsUSA website at <http://updates.skillsusa.org>.

PROHIBITED DEVICES

Cellphones, electronic watches, or other electronic devices not approved by a competition’s national technical committee are **NOT** allowed in the competition area. Please follow the guidelines in each technical standard for approved exceptions. Technical committee members may also support exceptions onsite during the SkillsUSA Championships if deemed appropriate.

Penalties for Prohibited Devices

If a competitor's electronic device makes noise or if the competitor is seen using it at any time during the competition, an official report will be documented for review by the Director of the SkillsUSA Championships. If it is confirmed that the competitor used the device in a manner that compromised the competition's integrity, the competitor's scores may be removed.

SCOPE OF THE COMPETITION

The competition is a two-person team event that tests technical knowledge and production skills, including critical thinking, creative problem solving, teamwork, interpersonal and visual communication, artistic design, and specialized programming.

KNOWLEDGE PERFORMANCE

The competition will include a written exam assessing the team's industry knowledge, including its jargon, technologies, and professional methods. Competitors must take the SkillsUSA Professional Development Test.

SKILL PERFORMANCE

Teams must produce an original prototype or sample of an interactive application or video game with at least one (1) level and ten (10) minutes of interactive content. It must be created during the school year immediately preceding the competition. The production should include the sample or prototype itself and other submissions described above in the "Supplied by Competitor" section. Resumes should include the skills gained from the experience developing the competition submission, the time that was invested, and the professional and academic relevance to the competitor's career ambitions.

COMPETITION GUIDELINES

1. Competitors will show up at the competition orientation meeting with their complete submission of written documents, including a resume for each team member, and their completed DD and digital videos, pre-tested and ready for submission on a USB drive. Late submissions will be docked 10% against all applicable judging criteria, and submissions will not be accepted after the designated competition setup time.
2. If an industry briefing or competition debriefing is offered, attendance is required.
3. Each team will assemble and test their sample/prototype and workstations at the designated setup time.
4. Schedules will be disseminated with the periods for interviews with the judges.
5. Outside their interview time, someone from the team should be on hand to demonstrate to the public and to watch over their equipment.
6. The competition timeframe will depend on the total number of entries, which will be, at most, two (2) eight-hour days.
7. The technical committee reserves the right to photograph and videotape competition-related activities.
8. The technical committee will be responsible for developing the evaluation tools to measure the competing team's performance objectively. Judging criteria will be general and will be done from the completed concept art/storyboard, demonstrated sample, or

Prototype any written and video submissions, resumes, exam scores, and interviews with the judges. Specific criteria may be based on demonstrating competency in conceptualization, design, artwork, content creation, gameplay, effective simulation, programming effectiveness, user-interface design, implementation, functionality, and performance on the target platform.

9. The team will be responsible for the setup, configuration, and teardown of all competitor-provided equipment.

STANDARDS AND COMPETENCIES

The technical committee has identified the following professional competencies addressed in the competition:

VG 1.0 — Solve a problem or create a conceptual design in a visual format

- 1.1. Conceptualization, visual communications for artists, and storyboarding techniques.
 - 1.1.1. Solve problems and develop stories creatively.
 - 1.1.2. Define how a problem will be solved or how a story will be told.
 - 1.1.3. Describe the concept visually with enough depth to communicate the final output substantially and accurately for team members and interested third parties.

VG 2.0 — Create and manipulate 2D, 3D, and audio computer-generated objects (assets)

- 2.1. Create assets using various technologies.
 - 2.1.1. Create and modify 2D artwork, including textures, sprites, and backgrounds.
 - 2.1.2. Create and modify 3D geometry to produce characters, objects, and environmental elements (models) with shape and texture.
 - 2.1.3. Create and modify audio elements.
 - 2.1.4. Optimize all assets for use in real-time, interactive environments.
 - 2.1.5. Use programming to apply physics and other properties to assets for creating complex behaviors and relationships.

VG 3.0 — Develop, optimize, and deploy complex interactive multimedia applications.

- 3.1. Position assets, lights, and cameras, organize environments into scenes/levels, and output as a functional, interactive multimedia application or video game.
- 3.2. Apply logical properties to lights, cameras, and other assets so they appear and behave correctly.
- 3.3. Add sounds, particles, and visual effects to enhance the quality of the user experience.
- 3.4. Create a functional user interface.
- 3.5. Test, optimize, and deploy as an application or video game.

VG 4.0 — Demonstrate the ability to work in a team environment

- 4.1. Cooperate with others to solve problems or bring a project from concept through development.
- 4.2. Demonstrate consensus building.
- 4.3. Apply written and visual communication skills to convey ideas between team members and interested third parties.

- 4.4. Divide tasks, set goals, and meet deadlines to complete complex projects with multiple contributors.

VG 5.0 — Demonstrate proficiency in technical, small-group communications

- 5.1. Show the judges that your submission evokes the intended response from the audience by using technical presentation skills and other communication techniques.
 - 5.1.1. Demonstrate in a manner appropriate to the audience.
 - 5.1.2. Capture and retain the audience’s attention and interest.
 - 5.1.3. Elicit intended aesthetic responses to visual, auditory, and kinesthetic stimuli.
 - 5.1.4. Achieve learning, familiarization, persuasion, or other intended objectives.

VG 6.0 — SkillsUSA Framework

The SkillsUSA Framework is used to pinpoint the Essential Elements in Personal Skills, Workplace Skills, and Technical Skills Grounded in Academics. Students must display or explain how they used some of these Essential Elements. Please reference the graphic, as you may be scored on specific elements applied to your project. For more, visit:

www.skillsusa.org/who-we-are/skillsusa-framework/.



Aligns with the academic standards and indicators of Game Design and Development Courses Code: 5352

English and Language Arts

SC Standard A2. Reading: Informational Text (RI)

Reading-Informational Text: Principles of Reading (P)

Standard 4: Read with sufficient accuracy and fluency to support comprehension.

Reading-Informational Text: Meaning and Context (MC)

Standard 5: Determine meaning and develop logical interpretations by making predictions, inferring, drawing conclusions, analyzing, synthesizing, providing evidence, and investigating multiple interpretations.

Standard 6: Summarize key details and ideas to support analysis of central concepts.

Reading-Informational Language, Craft, and Structure (LCS)

Standard 9: Apply strategies to determine and deepen the meaning of known, unknown, and multiple-meaning words, phrases, and jargon; acquire and use general academic and domain-specific vocabulary.

Reading-Informational Text: Range and Complexity (RC)

Standard 12: Read independently and comprehend a variety of texts for reading for enjoyment, acquiring new learning, and building stamina; reflect and respond to increasingly complex text over time.

SC Standard A4. Writing: Developing Written Communications (W)

Writing: Meaning, Context, and Craft (MCC)

Standard 1: Write arguments to support claims with clear reasons and relevant evidence.

Standard 2: Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through effective content selection, organization, and analysis.

SC Standard A5. Writing: Producing Written Communications in a Variety of Forms

Writing: Meaning, Context, and Craft (MCC)

Standard 3: Write narratives to develop real or imagined experiences or events using effective techniques, well-chosen details, and well-structured event sequences.

Writing: Language (L)

Standard 4: Demonstrate command of the conventions of standard English grammar and usage when writing and speaking.

Standard 5: Demonstrate command of standard English capitalization, punctuation, and spelling conventions when writing.

Writing: Range and Complexity (RC)

Standard 6: Write independently, legibly, and routinely for various tasks, purposes, and audiences over short and extended time frames.

SC Standard A6. Researching: Applying the Skills of Inquiry and Oral Communication Inquiry-Based Literacy Standards (I)

Standard 1: Formulate relevant, self-generated questions based on interests and needs that can be investigated.

Standard 2: Transact with texts to formulate questions, propose explanations, and consider alternative views and multiple perspectives.

Standard 3: Construct knowledge, applying disciplinary concepts and tools to build a deeper understanding of the world through exploration, collaboration, and analysis.

Standard 4: Synthesize information to share learning and take action.

Standard 5: Reflect throughout the inquiry process to assess metacognition, broaden understanding, and guide actions, individually and collaboratively.

Reading-Informational Text: Meaning and Context (MC)

Standard 7: Analyze the relationship among ideas, themes, or topics in multiple media and formats and visual, auditory, and kinesthetic modalities.

Communication: Meaning and Context (MC)

Standard 1: Interact with others to explore ideas and concepts, communicate meaning, and develop logical interpretations through collaborative conversations; build upon the ideas of others to clearly express one's

views while respecting diverse perspectives.

Standard 2: Articulate ideas, claims, and perspectives logically using information, findings, and credible evidence from sources.

Standard 3: Communicate information strategically using multiple modalities and multimedia to enrich understanding when presenting ideas and information.

Language, Craft, and Structure (LCS)

Standard 5: Incorporate craft techniques to engage and impact the audience and convey messages.

Mathematics Academic Standards

Elementary Algebra (Algebra 1, Foundations in Algebra, Intermediate Algebra, Algebra 2)

SC Standard A7. The student will understand and utilize the mathematical processes of problem-solving, reasoning and proof, communication, connections, and representation. (SCEA-1)

Creating Equations

A1.ACE.1* FA.ACE.1* 1A.ACE.1* Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable.

Reasoning with Equations and Inequalities

A1. AREI.4* IAAREI.4* A2. AIEI.One* Solve mathematical and real-world problems involving quadratic equations in one variable.

Structure and Expressions

A1.ASE.1* FA.ASE.1* IA.ASE.1* A2.ASE.1* Interpret the meanings of coefficients, factors, terms, and expressions based on their real-world contexts. Interpret complicated expressions as being composed of simpler expressions.

SC Standard A8. The student will demonstrate an understanding of relationships and functions through the mathematical processes. (SCEA-3)

Building Functions

FBF.1* Write a function that describes a relationship between two quantities. b. Combine functions using addition, subtraction, multiplication, and division operations to build new functions that describe the relationship between two quantities in mathematical and real-world situations. Interpreting Functions

FIF.2* Evaluate functions and interpret the meaning of expressions involving function notation from a mathematical perspective and in terms of the context when the function describes a real-world situation.

GEOMETRY

SC Standard A9. The student will understand and utilize the mathematical processes of problem-solving,

reasoning, proof, communication, connections, and representation. (SCG-1) ● Communicate knowledge of geometric relationships using mathematical terminology appropriately. ● Demonstrate and understand how geometry applies in real-world contexts (including architecture, construction, farming, and astronomy).

SC Standard A10. The student will demonstrate through the mathematical processes an understanding of the properties of basic geometric figures and the relationships between and among them. (SCG.2)

Circles

GCI.5* Derive the formulas for the length of an arc and the area of a sector in a circle and apply these formulas to solve mathematical and real-world problems.

Congruence

GCO.1* Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew regarding the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.

Modeling

GM.1* Use geometric shapes, their measures, and their properties to describe real-world objects. GM.2 Use geometry concepts and methods to model real-world situations and solve problems using a model.

Similarity, Right Triangles, and Trigonometry

GSRT.11 Use the Law of Sines and the Law of Cosines to solve for unknown measures of sides and angles of triangles that arise in mathematical and real-world problems.

Pre-Calculus

SC Standard A11. The student will understand and utilize the mathematical processes of problem-solving, reasoning and proof, communication, connections, and representation. (SC PC1)

Structure and Expressions PC.ASE.1 Interpret the meanings of coefficients, factors, terms, and expressions based on their real-world contexts. Interpret complicated expressions as being composed of simpler expressions.

Building Functions

PC.FBF.1 Write a function that describes a relationship between two quantities. b. Combine functions using addition, subtraction, multiplication, and division operations to build new functions that describe the relationship between two quantities in mathematical and real-world situations.

Circles

PC.GCI.5 Derive the formulas for the length of an arc and the area of a sector in a circle and apply these formulas to solve mathematical and real-world problems.

Derivatives

D.1 Understand the concept of the derivative of a function geometrically, numerically, analytically, and

verbally.

D.3 Apply theorems and rules of differentiation to solve mathematical and real-world problems. e. Solve various real-world problems involving related rates, optimization, linear approximation, and rates of change.

Probability and Statistics

SC Standard A12. The student will understand and utilize the mathematical processes of problem-solving, reasoning and proof, communication, connections, and representation. (SCPS1)

SC Standard A13. The student will demonstrate through the mathematical processes an understanding of the design of a statistical study. (SCPS-2)

Making Inferences and Justifying Conclusions

SC Standard A14. The student will demonstrate through the mathematical processes an understanding of the methodology for collecting, organizing, displaying, and interpreting data. (SCPS-3)

Interpreting Data

SC Standard A15. The student will demonstrate through the mathematical processes and understanding of basic statistical methods of analyzing data. (SCPS-4)

Using Probability to Make Decisions

PS. SPMD.4* Use probability to evaluate outcomes of decisions by finding expected values and determining if decisions are fair.

PS. SPMD.5* Use probability to evaluate outcomes of decisions. Use probabilities to make fair decisions.

PS. SPMD.Six* Analyze decisions and strategies using probability concepts.

Science and Academic Standards

Biology

SC Standard A16. The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions. (SC B-1)

Standard H.B.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop an understanding of science content.

Physics

SC Standard A22. The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions. (SC P-1)

Standard H.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop an understanding of science content.

Standard H.P.2: The student will demonstrate an understanding of how the interactions among objects and

their subsequent motion can be explained and predicted using the concept of forces.

Standard H.P.3: The student will demonstrate an understanding of how the interactions among objects can be explained and predicted using the concept of the conservation of energy.

Social Studies College and Career Reading Academic Standards

Economics and Personal Finance

SC Standard A25. The student will demonstrate an understanding of fundamental economic concepts at an individual, business, and governmental level. (SC ECON-1)

EPF.1.ER Examine how scarcity of time and resources necessitates decision-making.

EFP.1. IP Evaluate how short-term goals allow individuals and institutions to make rational decisions using marginal analysis.

SC Standard A26. The student will demonstrate an understanding of how scarcity and choice influence individual financial decisions. (SC ECON-2)

EPF.2.ER Research and analyze the factors that impact personal income and long-term earning potential.

EPF.2.IN Identify and explain the functions of different financial institutions and how they assist individuals in achieving short- and long-term financial goals.

EPF.2.CC Determine financially responsible ways that individuals acquire and use credit.

EPF.2. IP Develop a personal finance strategy for investing, protecting, purchasing, and saving resources.

Human Geography

SC Standard A31. The student will demonstrate an understanding of the characteristics of culture and cultural patterns and processes across Earth's surface. (HG-3)

HG.3.1. HS Identify the characteristics of popular and folk culture and explain the factors that influence the location and spatial distribution of these types of culture at the local and global scales using maps and geographic models and representations.

HG.3.2. HS Identify and analyze the spatial distribution, patterns, and diffusion of ethnic, linguistic, and religious cultural characteristics using maps and other geographic representations.

HG.3.3.PR Analyze and explain the conditions and connections that create ethnic, linguistic, and religious patterns at varying scales.

HG.3.4. HS Investigate and evaluate the cultural conditions in different regions that play a role in cooperation and conflict over time.

HG.3.5.PR Compare and contrast cultural landscapes in various regions and analyze the human imprint on different landscapes.

HG.3.6.AG Gather evidence of cultural patterns and processes, construct a map to explain current or future

development issues at different scales and communicate findings.

SC Standard A32. The student will demonstrate an understanding of how cooperation and conflict among people influence the division and control of the Earth's surface. (HG-4)

HG.4.1.HS Identify and analyze territoriality patterns, power relationships, and spatial organization relationships at various scales using maps and other geographic representations.

HG.4.2.PR Explain the conditions and connections contributing to creating boundaries and states and analyze how Earth's surface is organized on a contemporary political map.

HG.4.3.PR Analyze and evaluate the conditions and connections that have contributed to the development of the modern state system and the rise of supranationalism in various regions.

HG.4.4.PR Analyze how states spatially organize governance systems and explain the distribution and patterns of these political systems in various regions.

HG.4.5.HS Explain how forces of globalization and regional variations in resources can create opportunities for change, conflict, and cooperation for the control of the Earth's surface.

HG.4.6.AG Gather evidence on boundary issues at different scales, construct a map to explain changes in control over people, land, or resources, and communicate findings.

Technology Standards

Empowered Learner

SC Standard A39. Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences. (ISTE1)

- Articulate and set personal learning goals, develop strategies leveraging technology to achieve them, and reflect on the learning process itself to improve learning outcomes.
- Build networks and customize their learning environments in ways that support the learning process.
- Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.
- Understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

Digital Citizen

SC Standard A40. Students recognize the rights, responsibilities, and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical. (ISTE-2)

- Cultivate and manage their digital identify and reputation and are aware of the permanence of their actions in the digital world.
- Engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.

- Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property
- Manage their personal data to maintain digital privacy and security and are aware of data collection technology used to track their navigation online.

Knowledge Constructor

SC Standard A41. Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others. (ISTE-3)

- Plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.
- Evaluate the accuracy, perspective, credibility and relevance of information, media, data, or other resources.
- Curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.
- Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

Innovative Designer

SC Standards A42. Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions. (ISTE-4)

- Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
- Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
- Develop, test, and refine prototypes as part of a cyclical design process.
- Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

Computational Thinker

SC Standard A43. Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions. (ISTE-5)

- Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
- Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
- Break problems into component parts, extract key information, and develop descriptive models to understand complex systems to facilitate problem-solving.
- Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

Creative Communicator

SC Standard A44. Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats, and digital media appropriate to their goals. (ISTE-6)

- Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
- Create original works or responsibly repurpose or remix digital resources into new creations.
- Communicate complete ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.
- Publish or present content customizing the message and medium for their intended audiences.

Global Collaborator

SC Standard A45. Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally. (ISTE-7)

- Use digital tools to connect with learners from various backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.
- Use collaborative technologies to work with others, including peers, experts, or community members, to examine issues and problems from multiple viewpoints.
- Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.
- Explore local and global issues and use collaborative technologies to work with others to investigate solutions.

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COMMITTEE IDENTIFIED ACADEMIC SKILLS

The education committee has identified that the following academic skills are addressed in this competition.

Math Skills

- Use fractions to solve practical problems.
- Use proportions and ratios to solve practical problems.
- Solve practical problems involving percentages.
- Solve single variable algebraic expressions.
- Measure angles.
- Apply transformations (rotate or turn, reflect or flip, translate or slide, or dilate or scale) to geometric figures.
- Construct 3D models.
- Solve problems involving symmetry and transformation.

Science Skills

- Use knowledge of physical properties (shape, density, solubility, odor, melting point, boiling point, and color).
- Use knowledge of the nature and technological applications of light.
- Use knowledge of speed, velocity, and acceleration.

Language Arts Skills

- Provide information in conversations and group discussions.
- Provide information in oral presentations.

- Demonstrate verbal communication skills such as word choice, pitch, feeling, tone, and voice.
- Demonstrate comprehension of a variety of informational texts.
- Organize and synthesize information for use in written and oral presentations.
- Demonstrate knowledge of appropriate reference materials.
- Demonstrate narrative writing.

CONNECTIONS TO NATIONAL STANDARDS

State-level academic curriculum specialists identified the following connections to national educational standards.

Math Standards

- Geometry
- Measurement
- Problem-solving
- Communication
- Connections
- Representation

Source: NCTM Principles and Standards for School Mathematics. For more information, visit www.nctm.org.

Science Standards

- Understand forces and motion.
- Understand the nature of scientific inquiry.

Source: McREL compendium of national science standards. To view and search the compendium, visit www2.mcrel.org/compendium/.

Language Arts Standards

- Adjust spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with various audiences and for different purposes.
- Use various technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and create and communicate knowledge.
- Participate as knowledgeable, reflective, creative, and critical members of various communities.
- Use spoken, written, and visual language to accomplish their purposes (e.g., learning, enjoyment, persuasion, and the exchange of information).

Source: IRA/NCTE Standards for the English Language Arts. To view the standards, visit www.ncte.org/standards.

Market Demand

Today, people with the talent, passion, and drive to enter this thriving industry can find, according to a recent report from the Entertainment Software Association, that the U.S. video game industry consists of 2,457 companies that directly and indirectly support 220,000 jobs. The video game industry is growing with new products and technology and, therefore, could be worth nearly \$250 billion by the year's end.

Titles of the entry-level jobs appropriate to these skills

Software Engineer / Software Developer

A Software Developer serves as a member of the software development team. They aid in the innovation and creation of company software and programs. Generally found in tech-heavy industries and large corporations, a Software Developer will work alongside a team of programmers to code programs that meet the needs of the company or client. They seek to facilitate the proper design and implementation of software. From detailed

computer coding to innovative design, a Software Developer is an asset when creating a seamless software experience for customers. Typical salary ranges can range from \$70,000, with experienced and more senior positions earning over \$175,000 yearly.

Game Developer / Programmer/Arcade Game Prototyping Tech/Engineer/Platform Engineer

Game developers often work on teams and help to make a game's concept or ideas come to life. They create a story, outline the design, and create game prototypes. They are responsible for designing and developing video games for units including a personal computer, a console, or a mobile application. They code the base engine from the ideas of the game's design team and may be called upon to assist with character design, novel design animation, and unit testing. The typical salary range for Interns and Junior Developers can range from \$50,000, with experienced and more senior positions earning over \$125,000 yearly.

Video Game Designer/UI/UX Video Game Artist

Game artists create art for one or more types of games and help make a game's visual elements, including characters, vehicles, surface textures, and clothing. They create compelling and emotionally impactful artwork that fits and enhances the game theme's established style and branding. They push creative projects from the concept through development into final execution. They collaborate with a team to execute large and small projects with the same enthusiasm and maintain existing products while providing assets for marketing purposes. These artists can use their talents to create video game characters and earn between \$40,000 and \$100,000 yearly.

Game Developer (Junior, Lead)/ Unity Game Developer/Game Systems Designer

As a Game Designer, you will create new sports games and use computer programming languages to write the required code. You will manage the software development teams/project team through the software development life cycle. Your passion for video gaming will show through your exceptional creative and artistic skills during client pitch and new product development meetings. Successful game designers can take anywhere from \$50,000 to over \$100,000, depending on their experience and abilities.

Game/VR Producer/Producer - Gaming Media/ Multimedia - Games

As a game producer, this person deals with budgeting and project management and is also responsible for promoting the game to the "powers that be" within the gaming industry and the most influential people: the fans. Successful producers can make anywhere from \$50,000 to over \$140,000, depending on their experience and abilities.

Video Game Tester/QA Tester

This is the job that most can only dream of. Not only do they hire people to design the game, but they also actually hire people to play it! The position of a game tester is all about playing games, taking notes of any glitches in the system, and notating the consumer's expected experience playing the game. This is a lucrative job and one that is in high demand in the industry! Experienced testers can earn over \$100,000 yearly.

What are the prospects for **industry growth** in demand for these skills?

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