DIGITAL MEDIA ARTS

Introduction to Visual Arts and Digital Design

A PROGRAM OF STUDY AND A CURRICULUM FOR CAREER ACADEMIES

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Education Development Center, Inc.

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A Program of Study and a Curriculum for Career Academies

Overview

Digital / Media / Arts (D/M/A) is a three- or four-year program of study developed by Education Development Center, Inc. (EDC), with support from The James Irvine Foundation. It recommends a coherent sequence of technical courses, academic courses, and related learning experiences for high school students interested in the media and digital design (MDD) segment of the arts, media, and entertainment (AME) industry. The program of study is a resource for districts and high schools implementing AME career pathways and career academies, as well as for students and families looking to understand how MDD studies in high school will prepare students for post-secondary education as well as a career in the AME industry.

The D/M/A program of study begins with a rigorous, two-year curriculum, developed by EDC and designed to meet academic and career technical education standards. Industry practitioners and secondary and post-secondary educators provided substantial input in both the program of study and the curriculum created for the first two years of D/M/A. The third and fourth years use courses selected or designed by the district.

Over four years of high school, students pursuing the D/M/A program of study do the following:

- Complete a full academic program to prepare for admission to two- or four-year colleges or other post-secondary programs
- Complete rigorous foundation courses in visual arts and MDD
- Take an elective sequence concentrating on one technical area
- Learn to use the technology tools currently employed by AME professionals
- Engage in structured career exploration, including interactions with industry practitioners
- Pursue work-based learning activities to gain practical, real-world experience
- Plan and develop an independent, integrative senior project

A distinguishing feature of this program of study is its careful integration of academic and technical learning. Integration takes place on two levels:

- *Across specializations within the professional field:* The first-year Foundations course integrates the study of visual arts and digital media.
- *Between academic and technical courses:* One- to three-week units in math, science, history-social science, and English language arts demonstrate for teachers how academic disciplines may be connected to the pathways curriculum in substantive and meaningful ways, and demonstrate for students how academic proficiency is necessary for success in their careers.

In addition, the curriculum incorporates best practices identified by education research:

- An inquiry- and project-based approach to teaching and learning focused on essential questions that help students master key concepts
- Performance-based assessments that provide evidence of critical thinking, conceptual connections, and essential skills
- Appropriate use of technology to support learning
- Assignments that make curriculum accessible to a range of learners, including those with learning challenges or special needs

The entire D/M/A program of study develops such 21st century skills as teamwork, effective communication, reflective practice, making interdisciplinary connections, and creative problem solving. Students work in teams to solve real-world problems that require a range of disciplinary ideas and modes of inquiry. They regularly complete journal assignments in which they synthesize information, relate school learning to personal experience, and make interdisciplinary connections. Throughout the year, students develop an annotated portfolio of their art and media design work. Teaching the skills essential to carry out these activities is part of the curriculum design.

Components of the Program of Study

Career Technical Education Courses and Electives

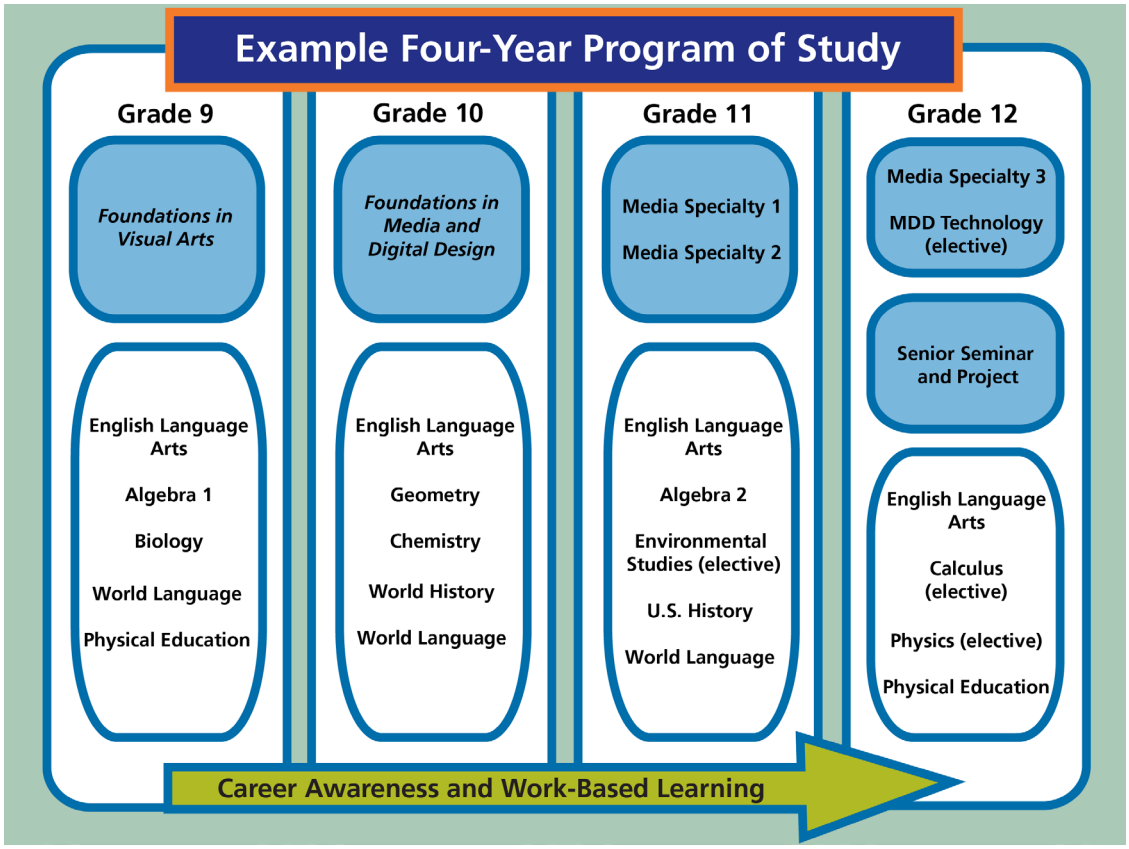
The D/M/A program of study recommends that in addition to academic and other high school graduation requirements, students successfully complete the following:

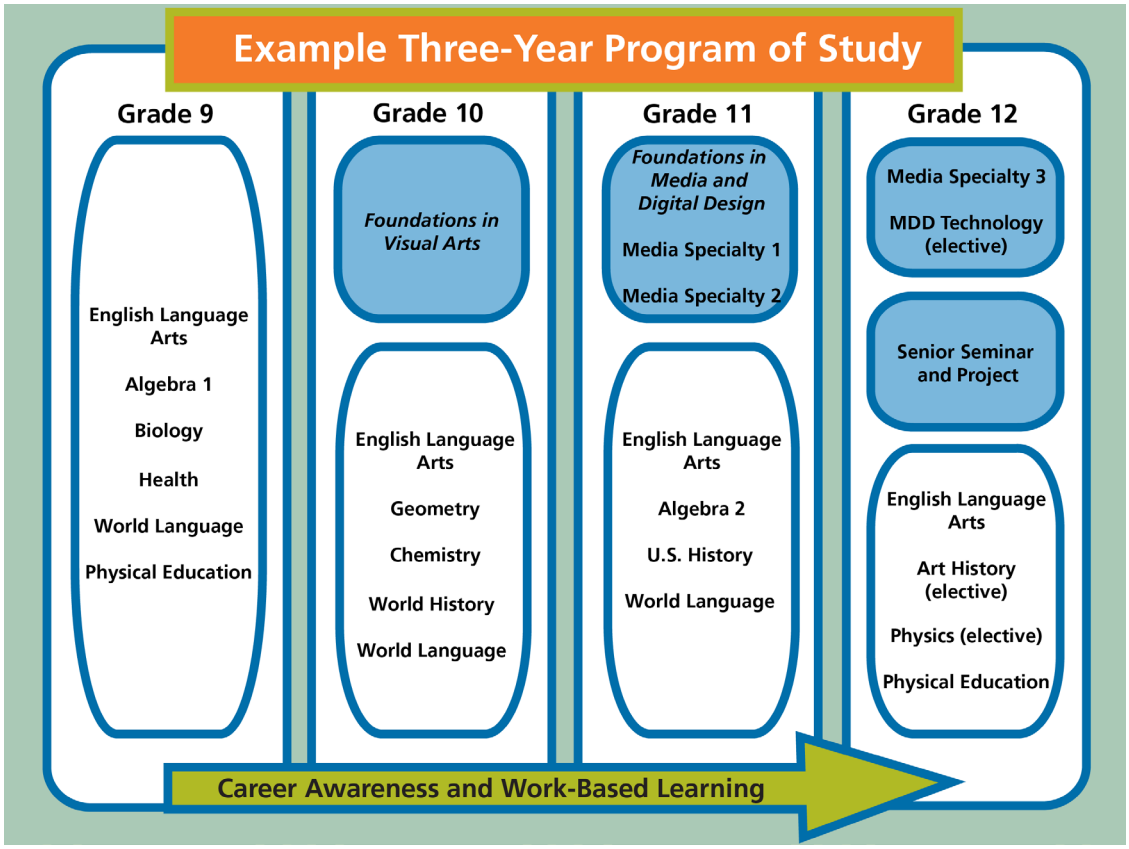
- *Foundations in Visual Arts* (two semesters)
- *Foundations in Media and Digital Design: Audio & Video* (one semester)
- *Foundations in Media and Digital Design: Animation & Game Design* (one semester)
- A three-semester concentration sequence in one of four technical areas:
  - Audio production
  - Film, TV, and video
  - Animation
  - Video game design
- A one-semester MDD technology elective
- A senior project seminar and senior project

Academic Courses and Electives

The D/M/A program of study recommends a full college-preparatory academic program, including four yearlong courses in English language arts and two yearlong courses in laboratory science, social science, mathematics, and world language. *Foundations in Visual Arts* is designed to meet visual and performing arts standards as a visual arts course. The D/M/A program of study strongly recommends that students use their remaining elective credits for supplemental coursework in social science, mathematics, English language arts, or science.

The example student plans (one for students beginning D/M/A in grade 9 and one for those beginning in grade 10) on the following pages model how a typical student in an MDD career academy could meet a full complement of graduation requirements over four years of high school.





Media and Digital Design Concentration Sequences

- Audio Production I
- Audio Production II
- Audio Production III

- Animation I
- Animation II
- Animation III

- Video Game Design & Development I
- Video Game Design & Development II
- Video Game Design & Development III

- Film, Video, & TV I
- Film, Video, & TV II
- Film, Video, & TV III

Media and Digital Design Technology Electives (Examples)

- Video Editing
- Web Development
- Computer Graphics Development
- 2-D or 3-D Animation Software
- Introduction to Audio Mixing Software
- Introduction to Programming for Video Games
- TV Production
- Website Design
- Music for Film and TV
- Media Marketing and Promotion

Work-Based Learning Opportunities (Examples)

- Community-based program
- Program-related internship
- Job shadowing
- Online or face-to-face mentoring by industry professional or post-secondary student
- Interactions with visiting practitioners
- Field trips
- Visits to post-secondary institutions
- Community service
- After-school or summer job

Foundations in Visual Arts

Foundations in Visual Arts is unique in that it applies fine arts techniques and design principles to the media formats that dominate students' visual world. Students study work created by others for various purposes, contexts, and audiences, and then create their own artwork for a similar variety of purposes and audiences, using a range of techniques and methods. While the technologies for creating and viewing media works change over time, the fundamentals of art and design do not. This foundational course prepares students to create media products with current—and future—technologies.

Foundations in Visual Arts incorporates 21st century skills (including teamwork, critical thinking, and communication) that students need to thrive in post-secondary learning, citizenship, and careers in any industry. In this course, students explore a range of arts and media careers, and they assume the roles of creative professionals by employing diverse approaches to visual problem solving in their course assignments.

Through assignments, portfolio development, and journal reflections, students continually return to their own vision, deepening and expanding their capacity to "see" both as creators and as critical consumers of art and media. In these ways, students come to understand how their individual creative vision is influenced by the culture and the contexts in which they live.

Course goals:

- Equip students with the artistic knowledge and skills needed for post-secondary education and careers in MDD
- Prepare students to become critical consumers of visual arts in a variety of media and contexts
- Strengthen students' confidence in their own creative vision and artistic expression
- Build understanding of the importance of visual arts knowledge and skills for producers of media and entertainment

Essential questions: Consistent with the developmental task of high school students, the five essential questions in *Foundations in Visual Arts* guide students to express their own artistic vision, identify ways in which the world has influenced them, and examine how their vision can in turn shape the world:

- What is your vision?
- How do you see the world?
- How does the world see you?
- How does the world influence your vision?
- How do you transform your vision into action?

Perspectives: To address the essential questions, students assume roles that allow them to see how different people look at and shape their worlds. In each unit, students consider the following from different points of view:

- **Image:** The way an object or concept is seen or depicted. Students explore how images are created and how they become meaningful in society.
- **Perspective:** The interrelationship of the viewer and the object. Students examine how people perceive things differently in different contexts and from different vantage points.
- **Imagination:** The active, creatively thinking mind. Students look at the central roles that creativity, imagination, and "visioning" play in visual art and media.

Skills and habits of mind: *Foundations in Visual Arts* focuses on building artistic skills and habits of mind. Students learn skills of observation, visualization, communication, teamwork, critical thinking, research/investigation, media literacy, inquiry, analysis, and creative problem solving. They develop awareness of design elements, such as shape, color, texture, and space, when they create visual compositions or compare and critique artwork from different eras and cultures.

Students engage in "design thinking" throughout the course as they create and study visual art in a variety of media. A design perspective is critical to understanding concept, form, and content, while the design process reinforces skills of questioning, brainstorming, gathering information, observing, analyzing, reflecting, presenting, and critiquing.

Unit structure: *Foundations in Visual Arts* consists of seven sequential, thematic units, which vary in length from four to six weeks. Each unit includes the following elements:

- Framing Questions
- Understandings (Learning goals)
- Project activities
- Methods and tools
- Studio experience
- Art history and research (both teacher- and student-initiated)
- Journaling/reflection
- Feedback/critique on work in progress
- Career Connections
- Presentations
- Assessments
- A physical and digital portfolio

Unit Descriptions

Fall Semester

Unit 1: Getting to Know You

Students learn how they can express themselves through artwork. They exchange information about themselves and their backgrounds with their classmates through such activities as sketching, creating a mixed-media artwork, graphic design, and journaling. For their unit project, students design and draw covers for their own solo albums. They create mixed-media projects, sketches, and drawings, including avatars for online use, and then use these works as inspiration for their album covers. In this unit, students also learn two protocols they will use throughout the course: the Feldman method to critique professional artwork and the Critical Response Process for feedback on their own work.

Unit 2: Saying It with Symbols

From cave art to animated movies, from medieval books to video games, illustration is an essential part of communication—and it's increasingly important in modern, digital media. In this unit, students develop drawing skills while experimenting with using symbols to convey ideas, emotions, or events. Students incorporate what they learn into a unit project: creating the artwork for a promotional piece for a film, TV show, or video game. Throughout the unit, students analyze examples of contemporary symbols, such as graffiti, wearable art, and advertisements, and how these symbols use visual elements to represent ideas, beliefs, and values.

Unit 3: Community Storytelling

Storytelling was one of the earliest forms of entertainment, and it continues to play a crucial role in visual AME today. In this unit, students research and analyze examples of storytelling in art and media throughout history and across cultures. They compare materials and methods of the past with contemporary art, and look at how stories are told in a variety of media, from paintings to movies to video games.

Students look to their communities for inspiration for their unit projects. In teams, they learn the story of a community member and create storyboards for a short film. Optionally, students use the same story to draw a page of a graphic novel.

Unit 4: Make Me a World

How do artists use elements of art and design to envision, support, and enrich a storyline? To gain an understanding of the process through which artists create evocative concept and landscape images, students study color and the design principles of unity, variation, and repetition. They paint original still lifes and landscapes. They also look at examples of concept art—art used to visualize and convey ideas for a TV show, film, or video game before production. For their unit project, students paint original concept art for a TV show, film, or video game.

Spring Semester

Unit 5: Creating Characters

An essential element of visual storytelling is the creation of believable characters with distinct visual styles. In this unit, students develop characters for animation. They look at examples of animated films, focusing on characters, their roles, and the visual elements that define them. For the unit project, students develop an idea for an animated film and the character that plays a starring role. Throughout the unit, students develop the character's visual look through *turnaround* sheets (sketches that show different views of the character), character studies showing expressions, and a sculpted *maquette* (a 3-D model).

At the end of the unit, students are introduced to the culminating projects for the course—a public exhibition of their work and a Career Research project, in which they interview an industry professional and present that career to classmates at a career fair.

Unit 6: Games for Good

Students learn how art and media can be used to advocate for issues and spur people to take action. They study issue-based art and media and investigate how the design, interactivity, and visual elements of a video game can engage audiences and teach them about an issue. For the unit project, they create a video game concept that engages their peers in an issue of personal interest. Students synthesize what they've learned in the first five units to conceive the game's storyline and create concept art for its setting and characters. At the end of the unit, students pitch their video game concepts to an audience.

Unit 7: Art Show!

In this final unit, students develop an interactive community exhibition that showcases their stories, their issues, and their artistic talents. Curatorial teams identify themes for their sections of the exhibition and design their exhibition spaces. Students select work from their portfolios to present at the exhibition. Exhibition preparation teams work on tasks such as public relations and the design of promotional materials. Students may also create a digital exhibition of their work.

As they prepare for the exhibition, students complete two other semester-long projects: a career fair, during which they share their Career Research projects, and an individual portfolio review with the teacher.

Foundations in Media and Digital Design

Foundations in Media and Digital Design is a sequence of two semester-long courses, *Audio & Video* and *Animation & Game Design*, that build on students' learning in *Foundations in Visual Arts* to introduce key technical specializations that drive the MDD sector. Students leave the course with enough experience to choose a technical concentration to pursue in the third and fourth year of the program. The course focuses on four media specializations:

- Audio production
- Film, video, and television production
- Animation
- Video game design

The projects in *Foundations in Media and Digital Design* have the following characteristics:

- Projects are of a longer duration and are more complex than those in *Foundations in Visual Arts*
- Projects involve a primary digital medium, but also apply technical and design skills related to multiple media
- Projects are split among those that address community service and those that create more commercial products
- Assignments address various target audiences, for example, teens or community members

Foundations in Media and Digital Design is presented as two separate semester-long courses so that teachers can teach one course or both, depending on their areas of expertise. Because the units build on one another, students should take the course in sequence.

Projects in the two courses draw on a range of disciplinary ideas and modes of inquiry while mirroring the work of professionals in media production. Throughout the courses, students describe, interpret, analyze, and evaluate works of media and art. They research primary sources and write extensively as they work on their own media productions. They create media works and reflect orally and in writing about the creative process. In each course, students conduct an independent research project to investigate a media career that interests them. The courses also develop 21st century skills, such as creative problem solving, reflective practice, planning and time management, making interdisciplinary connections, teamwork, and effective communication.

Course goals:

- Develop students' understanding of the distinct characteristics of audio, video, animation, and video games and teach students to use them to effectively communicate an idea or tell a story
- Convey the fundamental principles of and technical knowledge needed in media pre-production, production, and post-production
- Strengthen students' skills in analysis, interpretation, critique, research, writing, and presentation
- Strengthen students' ability to express their artistic visions and ideas and to create and critically consume media in a variety of contexts
- Develop students' awareness of a range of careers related to media production and the academic and technical background required

Unit structure: Each course consists of two units. Each unit focuses on a specific type of media and includes the following elements:

- Framing Questions
- Understandings (Learning goals)
- Project activities:
  - Development, research, and design
  - Production experience
  - Journaling/reflection
  - Feedback/critique on work in progress
- Career awareness and research
- Oral and written presentations
- Assessments
- Weekly written critiques of audio, video, animation, and gaming productions
- Homework (in the form of journaling, research, and project work)

Foundations in Media and Digital Design: Audio & Video

Foundations in Media and Digital Design: Audio & Video is a semester-long two-unit course in which students develop technical skills in audio and video production in the context of telling a story. Students learn key elements of storytelling, such as identifying and creating a story for a specific audience, crafting a story's arc, and creating a narrative through images and sound. They learn how audio producers, filmmakers, and documentarians use the characteristics of the medium to convey information and tell a story. Students identify compelling stories in their school or local community and then document two of them, one through audio and the other through video. They learn the pre-production, production, and post-production process that media-makers use, and they develop the technical skills of each phase by creating their own media works. Students also learn about some ethical and legal considerations related to media-making.

Unit 1: Telling Stories with Sound

This unit introduces students to principles of sound design and techniques of audio production that they can use in media projects in this course and beyond. For their unit project, student teams create documentary audio stories to air on a school or local radio show or to post as a podcast. The stories can be personal anecdotes, explorations of a social issue, or profiles of a person or place in their community. Students tell their stories through recorded interviews, ambient sound, and narration. They learn pre-production, production, and post-production skills, including research, story development, interviewing, audio recording, script writing, and digital editing.

Unit 2: Telling Stories with Moving Images

Students explore the power of the moving image as a medium for telling stories, using the visual language of movies and TV to create a story and convey information to an audience. Students learn a variety of video production techniques, including using a camera, composing an effective shot, creating a soundtrack, and editing footage to create a coherent work. For their unit project, student teams produce a short video documentary about "the best" or "the worst" of their community—what makes it great, or what could change to make the community better. Teams conduct research about their topic and choose one story or vignette on which to focus their video. Students shoot footage to use to tell the story

primarily through action and images. They edit their footage into a video that includes titles, transitions, and a soundtrack. At the end of the unit, students present a public screening of the video and audio works they created during the course.

Foundations in Media and Digital Design: Animation & Game Design

Foundations in Media and Digital Design: Animation & Game Design is a semester-long two-unit course in which students learn the principles of animation and video game design and develop fundamental technical skills. The course investigates communication through two media—animation and video games. Students view and analyze professional animations and video games to understand how the distinct characteristics of each medium are used to convey character, emotion, setting, and the actions that advance a narrative. Students select a traditional or contemporary story and create a hand-drawn animation for a moment from one scene in the work. Students design their own simple video games, preparing written design documents and finished artwork, and use game development software to create their games. They pitch their ideas for full-length animations and present their video games to classmates and, ideally, professionals from the AME industry.

Unit 1: The Animated World

Students learn first-hand the techniques and principles of animation, starting with hand-drawn pencil-and-paper animation and moving to computer-generated 2-D animation. Throughout the unit, they look at how animated movies use the principles of animation as well as the elements of art and the principles of design. Students extend and deepen their story development skills from *Foundations of Media and Digital Design: Audio & Video*, transitioning from nonfiction to fiction stories. For their unit project, students develop an idea for an animated movie based on a fairy tale, myth, folktale, or short story. They create a design for the main character, choose a moment from the story, and animate that moment. At the end of the unit, students pitch their animated movie idea to classmates and, ideally, to AME professionals.

Unit 2: Principles of Game Design

Students learn principles and strategies for designing games. They play and analyze a variety of games, exploring both game structure and how the games are played. Students create a "reverse-design document" of an existing game, unpacking its design elements and identifying the components and features—such as game play, level of challenge, and the game's visual environment—that make the game engaging. For their unit project, students work in teams to design and develop a simple video game using game development software. They complete a design document and wireframes that show the user interface at different points in the game. Students use software to create their game, create art for their game, test their game by having another team play it, and revise their game based on player feedback. At the end of the unit, students use all the materials they have developed to present their game to classmates and, ideally, to AME professionals.

Integrated Academic Units

To ensure that students are prepared for college as well as a career, integrated units help subject area teachers make connections among academic content, authentic work in the AME industry, and the projects of the Foundations courses. There are integrated units for English language arts, algebra, geometry, chemistry, biology, physics, world history, and U.S. history. The units meet disciplinary content standards and can replace or supplement units in regular academic classes.

Integrated units are designed for one to three weeks of study. Although each relates to the concepts and skills of one or more particular Foundations units, they are designed for flexible use by teachers in the pathway or academy.

An academic unit can be taught either before or after the related Foundations unit, if academic teachers follow their regular syllabus. Alternatively, academic and Foundations teachers can coordinate schedules and teach the related units as a multi-disciplinary project. Integrated units also serve as models for teachers who wish to develop their own integrated units.

Mathematics

Proportion Matters (Algebra 1, Geometry)

Students explore the head-to-body and facial feature proportions of humans and animated characters to understand the effect of these proportions on how we perceive a character's personality. Students learn to use proportions to create an animated character with specific characteristics. This unit relates to *Foundations in Visual Arts, Unit 3*, in which students create characters, and to *Foundations in Media and Digital Design: Animation & Game Design, Unit 1*, in which students create short animations.

Linear Programming: Optimizing Media Reach (Algebra 1)

This unit is built around a central problem: maximizing media reach to promote a youth media festival. Students set up a linear programming problem and solve it graphically to determine how best to use newspaper and radio ads to reach the greatest number of people for the least cost. This unit relates to *Foundations in Visual Arts, Unit 7*, in which students plan and host an exhibition of their work for the school or local community.

Transforming Figures (Geometry)

Students create flipbooks by applying geometric transformations to original designs to create the appearance of motion. They learn the mathematics behind animation and see how mathematics concepts and tools are useful for animators. This unit relates to *Foundations in Visual Arts, Unit 5*, and *Foundations in Media and Digital Design: Animation & Game Design, Unit 1*, in which students plan or create animations.

Functions and Sound (Algebra 2, Trigonometry, Pre-Calculus)

Students discover how sound waves can be modeled mathematically. Students investigate and compare functions and the equations and graphs that represent them, including the sine functions that represent sound waves. This unit relates to *Foundations in Media and Digital Design: Audio & Video, Unit 1*, in which students create audio stories targeted for teens.

Science

Light! Color! Perception! (Biology)

Light! Color! Perception! relates the physiology of color perception to visual art and media. Students gain a basic understanding of the relationship of light to color and explore the workings of the nervous system, including the physiology of the eye and the brain and how the two interact to perceive color. They also learn how arts and media take advantage of these physiological interactions to produce a range of visual effects. This unit relates to *Foundations in Visual Arts, Unit 4*, in which students work with color to paint landscapes and concept art for a video or virtual world.

The Power of the Nucleus (Chemistry)

This unit uses compelling societal issues—such as clean energy, nuclear waste disposal, and food irradiation—as a context for student learning about nuclear chemistry. Teachers teach the chemistry content relevant to the selected issue using their textbook or other curriculum, and students apply their learning to create media projects that advocate or educate about the selected issue(s). This unit relates to *Foundations in Visual Arts, Unit 6*, in which students explore how the design of a video game can engage and teach audiences about an issue. The unit can also be taught in conjunction with *Foundations in Media and Digital Design: Animation & Game Design, Unit 2*, in which students design and create a simple video game.

Acoustics: The Science of Sound (Physics)

In this unit, the goal of producing the best possible audio component for a media project serves as the context for learning about sound waves and about mechanical waves in general. Students experiment with sound, sound waves, and devices to capture and record sound. They use sound editing software to examine and manipulate the graphs of sound waves. This unit relates to *Foundations in Media and Digital Design: Audio & Video, Unit 1*, in which students create documentary audio stories.

Physical Reality in Video Games (Physics)

Students examine video game worlds to understand whether physical forces and motion operate in these games in the same ways as they do on Earth. Students consider how the principles of mechanics are represented in a video game and how these representations affect game play. This unit relates to *Foundations in Media and Digital Design: Animation & Game Design, Unit 2*, in which students design and develop a simple video game.

History-Social Science

The Path to World War II (World History)

Students learn about the conditions and events leading to World War II and then storyboard a film sequence that tells one story about Europe's path to the war. This unit relates to *Foundations in Visual Arts, Unit 3*, in which students analyze how stories are told through visual media and create storyboards for a scene from a film.

Cold War Games (World History)

Students take on the role of video game researchers to learn about the complex web of events, conflicts, and policies of the Cold War. They prepare recommendations for the design of a game based on a pivotal

event during this era. This unit relates to *Foundations in Visual Arts, Unit 6*, in which students explore how a video game can engage and teach audiences about an issue, and *Foundations in Media and Digital Design: Animation & Game Design, Unit 2*, in which students design and develop a simple video game.

Podcasting the Past (U.S. History)

Students conduct independent research to uncover the history of their communities. They create podcast scripts or actual podcasts about the history of a building or other physical place in the community. This unit relates to *Foundations in Media and Digital Design: Audio & Video, Unit 1*, in which students create documentary audio stories.

Animating Labor History (U.S. History)

Students act as researchers working on an animated movie about an event in U.S. labor history. Through independent research and classroom activities, using both primary and secondary sources, students create biographies about the appearance, actions, and daily lives of the main characters in the animated movie. This unit relates to *Foundations in Visual Arts, Unit 5*, and *Foundations in Media and Digital Design: Animation & Game Design, Unit 1*, in which students plan or create animations.

English Language Arts

Settings from Page to Screen

Students research how authors create settings in fiction and explore the relationship between creating settings for literature and creating them for visual media, such as movies or television. This unit relates to *Foundations in Visual Arts, Unit 4*, in which students work with color to paint still lifes, landscapes, and concept art depicting a setting for a movie, animation, or video game.

Casting a Novel Character

Students analyze characters and their development in fiction or biographies. They imagine one character from a written work as a main character in a TV show or movie and then craft both a monologue to introduce the character and a dialogue that reveals the character's development. This unit relates to *Foundations in Visual Arts, Unit 5*, and *Foundations in Media and Digital Design: Animation & Game Design, Unit 1*, in which students design and create characters for animation.

Going Public: Writing to Present and Promote Your Work

Students complete two writing projects in support of an art exhibition or other event: a press release conveying essential information, and an artist statement, in which they reflect on themselves as artists and describe their work in the show or event. This unit relates to *Foundations in Visual Arts, Unit 7*, in which students plan and host an exhibition of their work for the school or local community.

Everyone Has a Story

In a series of investigations, students analyze audio stories and memoirs to see how authors use narrative arc, point of view, characterization, and other literary elements to narrate stories. Students write short memoirs that may be turned into audio stories or podcasts. This unit relates to *Foundations in Media and Digital Design: Audio & Video, Unit 1*, in which students create documentary audio stories. It can also be taught with *Foundations in Visual Arts, Unit 3*, in which students create storyboards for visual media.

Third and Fourth Year Electives

Concentration sequence: After completing *Foundations in Media and Digital Design*, students choose a medium in which to develop advanced technical skills and knowledge, then take a concentration sequence of three semester-long courses in their chosen specialty.

Technology elective: Students take a one-semester course to learn to use art, media, or design technology. Students may take appropriate technology courses offered by any department in their school or, depending on their school's policies, at another institution from which credit will be accepted, such as another high school in the district or a local community college.

Additional academic electives: Beyond the media-related elective requirements, students will have additional elective credits to fulfill. The D/M/A program of study recommends that students choose courses in science, history-social science, English language arts, or a language other than English.

Senior seminar and project: Students take the senior seminar in the fall semester of grade 12, where they learn the skills they need to develop a project proposal; recruit advisors; secure access, materials, and support; and develop a project plan. In the spring semester, students carry out their senior projects, which involve three key components:

- Creating an original media work intended for commercial use or community benefit. The work must use technical and artistic skills from the student's technical specialty and at least one other medium.
- Recruiting a project advisor team, consisting of the media teacher, one academic teacher, and an industry practitioner, to provide feedback and support.
- Writing an artist's statement that describes the purpose and meaning of the work and the process by which it was developed.

Work-Based Learning

Effective learning environments remove the barriers that separate school from the real world. Each unit in the Foundations courses encourages industry connections and recommends how to tie these connections to students' projects and learning activities.

Work-based learning activities connected to the curriculum may begin with activities such as field trips, guest speakers, and job shadowing in the first years of the program. In years 3 and 4, students should participate in internships, mentor-mentee relationships, summer and after-school jobs, community service, and other programs organized by the school or through school-community partnerships. School and career-oriented websites, such as ConnectEd Studios, often have resources to facilitate online and face-to-face interactions between students and industry professionals.

Pathways to Post-Secondary Education and Careers

Post-Secondary Options

Graduates of the D/M/A program will have many post-secondary options available to them, including two- or four-year degrees from public or private colleges and technical certifications.

Two- and Four-Year Colleges and Universities

Arts, A.A., B.A., or B.F.A.
- Animation
- Illustration
- Computer Graphics
- Graphic Design
- Multimedia
- Time-Based Media
- 3-D Media

Communication Design, B.A.
- Digital Media
- Media Arts

Design/Media Arts, A.A., A.S., B.A.
- Audio Recording
- Music Technology
- Video
- Multimedia

Television, Film, and Media Studies, A.A., B.A.
- Animation
- Telecommunications

Computer Science, B.S.
- Computer Game Design
- Multimedia and Applied Computing
- Interdisciplinary Computing and the Arts

Film, B.A. or A.B.
- Film and Digital Media
- Film and Media Studies
- Film and Television
- Film Studies

Media and Cultural Studies, B.A.
- Ethnography, Documentary, and Visual Culture
- Film and Visual Media
- Film, Literature, and Culture

Television Arts, Web Design, & Interactive Media, A.S.

Graphic Design, A.S.

Technical Certification

- Animation (3-D, 3-D Level II)
- Audio Production
- Computer Animation
- Computer Graphics
- Game Design
- Digital Filmmaking & Video Production
- Digital Media Art
- Electronic Publishing Design
- Film/Television Production
- Game Art & Design
- Graphic Design
- Illustration
- Media Arts
- Media Design & Development
- Motion Graphics Design
- 3-D Modeling
- Web Publishing and Multimedia

Career Options

In each unit of the D/M/A curriculum, students investigate MDD careers that draw on the visual arts, media-making, and 21st century skills they are learning. Students read and discuss career information and do independent research on careers of their choice. As much as possible, students interact with industry professionals, either in person or online, and the units provide teachers with specific suggestions and resources for engaging industry professionals to support students' learning.

In addition, each unit identifies three key careers, distinguished by boldface in the following table, for students to investigate in depth. Students learn about the day-to-day tasks, long-term responsibilities, workplace and technical skills, schedules, and professional interests of people who hold these positions. They also learn whether people in these careers tend to be permanent or freelance employees, what other types of positions they have held to "break in" to these positions, and where they may plan to go next professionally. Students discover the levels of education and portfolio work likely to be expected from job applicants and how that may vary from industry to industry.

Careers Explored in Digital / Media / Arts

	Animation	Audio	Game Design	Graphic Design	Video and Film
ENTRY-LEVEL CAREERS (0–2 years experience)	Animation Assistant **Digital Painter** **Production Assistant** Set Dresser **Storyboard Assistant**	Production Assistant **Sound Assistant**	Animation Assistant Assistant Editor Design Assistant **Game Tester** **Production Assistant**	**Assistant Graphic Designer** Exhibit Designer **Logo Designer** Manga Letterer Production Artist **Production Assistant**	Assistant Editor **Assistant Location Manager** Post-Production Assistant **Production Assistant** Storyboard Assistant
MID-LEVEL CAREERS (2–5 years experience)	Animator Assistant Editor **Character Artist** **Character Modeler** Compositor **Concept Artist** FX Animator **Landscape Painter** Layout Artist **Lighter** Matte Painter Rigger **Storyboard Artist** Texture Painter	Audio Equipment Technician Boom Operator Broadcast Technician Music Mixer Production Sound Mixer Sound Editor **Sound Engineering Technician** Sound Mixer	Animator Artificial Intelligence Programmer **Associate Producer** **Character Artist** **Character Modeler** **Concept Artist** Environment Artist **Game Artist** Layout Artist Level Designer Product Planner Programmer Texture Artist	Associate Producer **Comic Book Inker** **Comic Book Penciller** **Curator** **Graphic Designer** **Illustrator** Layout Artist **Photo Stylist** Typographer	Assistant Director Background (Matte) Painter Boom Operator **Concept Artist** Costume Designer Foley Artist Layout Artist Lighting Technician Photo Editor **Photo Stylist** **Storyboard Artist**
ARTISAN AND ADVANCED-LEVEL CAREERS (5+ years experience)	Animation Supervisor **Art Director** **Character Sculptor** Director Editor Flash Designer Lead Animator Modeling Supervisor Paint Supervisor **Production Designer** Visual Effects Supervisor	Audio Production Supervisor Producer **Sound Designer** Technical Supervisor	**Art Director** Editor Executive Producer Flash Designer **Game Designer** **Interactive Media Producer** **Lead Designer** **Lead Programmer** **Level Designer**	**Art Director** Design Manager Interface Designer Paint Supervisor/ Department Head Project Manager	Animator **Art Director** **Director** **Director of Photography** **Editor** **Interactive Media Producer** Paint Supervisor/ Department Head Painter **Production Designer** Property Master **Standby Painter**

Critical Support for Successful Implementation

Students' success in the D/M/A program of study depends on the investment and commitment of all participants along the school-to-work continuum.

Industry: Recruitment and involvement of industry practitioners is critical in order to motivate students and help them understand career options in the AME field and the connection between what they are learning in high school and the jobs they will desire in the future. Industry support might include the following:

- Practitioner visits
- Authentic assessment
- Senior project advising
- Class projects based on real industry challenges
- Awards or scholarships
- Job-shadowing opportunities
- Summer jobs
- Paid and unpaid internships

Post-secondary programs: The participation of higher education programs helps students prepare for post-secondary learning and ensures that they have the skills they need to succeed. Community colleges in particular can partner with high schools through articulation agreements for advanced placement and other courses to supplement the high school program.

Technology resources and support: Students specializing in MDD must be able to learn using current hardware, software, and media. It's especially important that these resources are available at school for students who may not have access to them at home.

Classroom support: Project-based learning in art and digital media requires hands-on work with many materials and often individual instruction. Industry practitioners, post-secondary students, and others can provide both expertise and extra hands to work with students in the D/M/A program. Students with learning or second language challenges may also require support from appropriate school personnel.

Teacher professional development: The D/M/A program of study may involve content knowledge, pedagogies, and classroom management skills that require new learning for teachers. Teacher professional development is essential to support teachers and encourage them to continue to pursue their own growth and learning.

Student Vignettes

The vignettes below illustrate how the components of the D/M/A program of study (Foundations courses, concentration electives, the senior project, courses in the academic disciplines, work-based learning, and career exploration) all work together to build the skills, knowledge, and readiness for higher education and careers for students with a range of interests, experiences, and backgrounds.

Enrique's Story: Video Game Development

Enrique's family moved to Los Angeles from Mexico four years ago. He and his friends enjoy playing computer and video games. He also likes comics and draws cartoons of superheroes. No one in his family is a college graduate, and Enrique's parents insist that he choose a program in high school that will lead to a job.

Enrique has done OK in middle school, although he is self-conscious because English is his second language and this slows him down some in academic classes. However, he excels in art, because drawing makes it easier for him to communicate his ideas. Enrique thinks that nothing would be cooler than to study art, computers, and games in high school. It takes a meeting with his guidance counselor to convince his parents that an AME career academy not too far from his neighborhood will allow Enrique to turn his art abilities into a career.

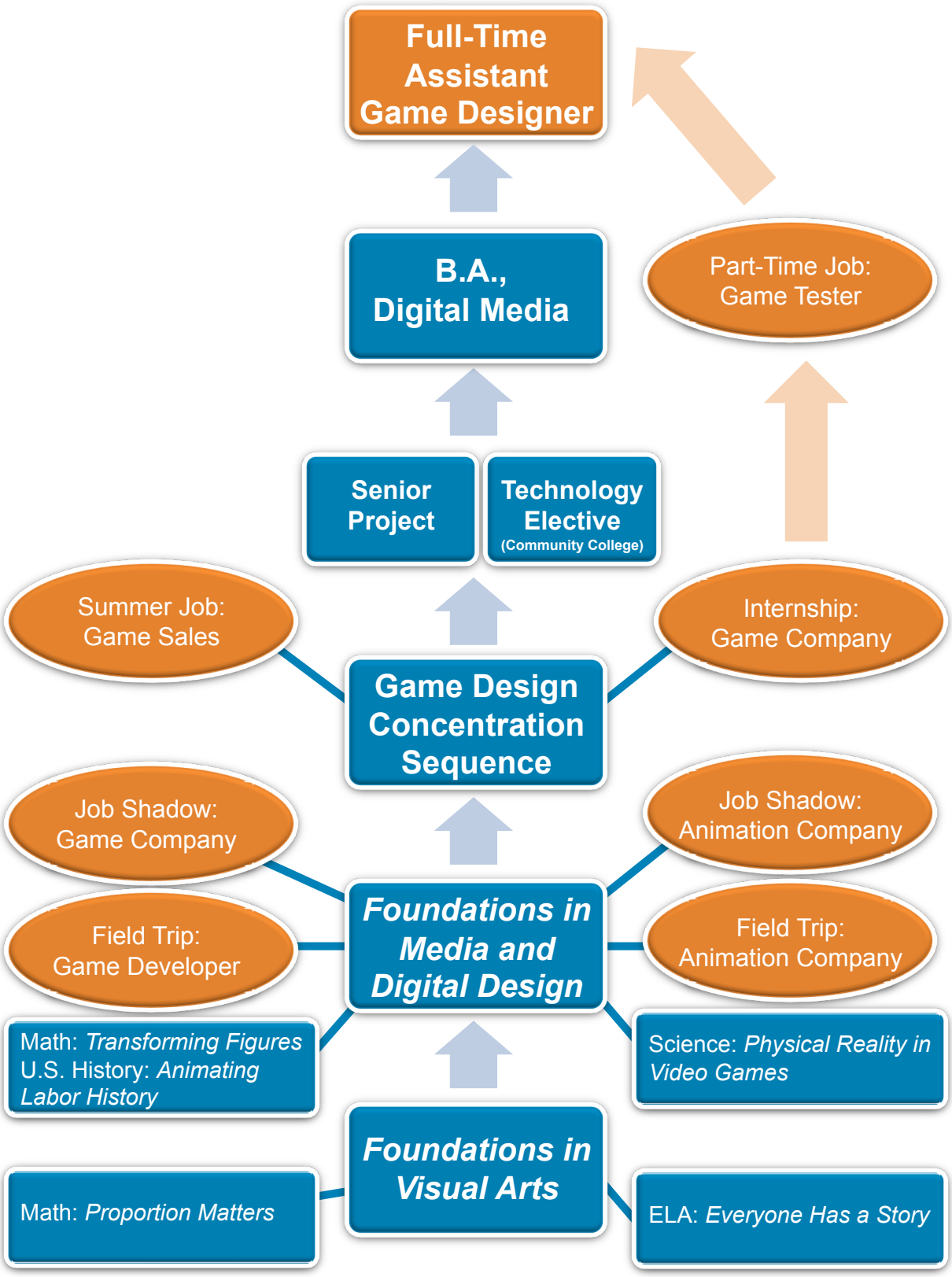
In ninth grade, the *Foundations in Visual Arts* course hooks him. Enrique learns there is more to making up video games than drawing characters. He also learns to create backgrounds, settings, and 3-D sculptures of his characters.

In his math class, Enrique learns how designers use math to create effective animations; in English, he learns how to fit the characters he dreams up into a storyline. By grade 10, Enrique's English is stronger, and he is more confident in his academic courses. Through his teamwork assignments, he has made new friends who appreciate his ability to draw. Enrique particularly enjoys the animation unit in the second year course, *Foundations in Media and Digital Design: Animation & Game Design*, and he starts thinking about becoming an animator instead of a game designer.

To be sure that he is pursuing the right career area, in the spring of tenth grade, Enrique job-shadows a designer in a game company and an animator at a film studio. Enrique realizes that he wants to design games, not just create animations for them, so in grades 11 and 12, Enrique chooses three game design courses for his MDD concentration sequence, one of which focuses on animation. For his technology elective, Enrique wants to learn 3-D animation software. His school does not offer this class, so he signs up for a course at a community college.

Throughout high school, Enrique works a part-time job in the games department at the local Best Buy. During the summer of his junior year, Enrique signs up for an internship as a computer game tester for a large video game development company. This turns into a part-time job that helps Enrique with his college tuition. He enrolls in a Bachelor of Arts program in Digital Media. After graduation, Enrique begins an entry-level job as an assistant game designer for a small video game developer.

Enrique's Path: Video Game Development



Ronda's Story: Audio Production

Ronda is an above-average middle school student, but she hasn't thought much about what kind of high school she would like to attend. When her best friend signs up for an AME career academy, Ronda does too so they will have classes together.

In tenth grade, Ronda continues to do well in her academic subjects but has no idea what she wants to study in college or what career she might pursue. She finds *Foundations in Visual Arts* quite challenging—she does not know how to draw and doesn't think of herself as an artist, but she likes the discussions, the variety of assignments, the field trips, and the team projects. She also enjoys the English and math units connected to preparing for the year-end exhibition, because she sees a practical application for what she is learning. Ronda's role during the exhibition is to set up and run the audio equipment in the auditorium, which she loves. Ronda selects audio production for her third and fourth year concentration sequence.

During grade 11, as part of *Foundations in Media and Digital Design: Audio & Video*, Ronda's team creates an audio documentary about a community art center. She finds that she is good at selecting and editing the music and at keeping the group on task. During school vacation weeks, Ronda signs up for two mini-internships offered through her school's partnership with a workforce development organization—one with a DJ, and one with a sound engineer for a recording studio. Ronda begins to think that she might actually be able to work in the music industry. She researches jobs in the field and the experience required to land them.

Ronda's Audio Production 1 class takes a field trip to an audio production studio to observe engineers as they edit recorded interviews. During the spring term, she job-shadows a sound effects professional at a movie studio. For the summer of her junior year, she responds to a flyer on the school website for a paid internship and works as a recording assistant at a summer music program sponsored by the community college. There she meets people who share her interest in music and sound, and she gets to experiment with the soundboard in the engineer's booth.

As her senior year technology elective, Ronda chooses an online course to learn how to use music-mixing software. For her senior project, Ronda produces an album for a local band. During the year Ronda also volunteers at an after-school music program at the community center.

As Ronda applies to colleges in her senior year, she worries about how she will pay for it. A teacher tells her about a two-year, part-time program in electronic music. Ronda begins this program and works as an entry-level sound assistant at a small audio production house. There she is offered a full-time job as a production assistant after she graduates with her associate's degree.

Ronda's Path: Audio Production