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Endeavor: STEM Career Exploration™

Curriculum Guide

- **Recommended Grade Level:** 6–9
- **Total Time:** 2–2.5 hours
- **Subject Fit:** Career Technical Education
- **Standards Alignment:** Common Career Technical Core, Common Core State Standards (Practices), Next Generation Science Standards, Code.org/CSTA Standards

COURSE DESCRIPTION

"It's no longer just about 'What do I want to be when I grow up?' but 'How will I get there?'"

We live in a world increasingly shaped by STEM - science, technology, engineering, and math. From the data-driven decisions of the business world to the automation of manufacturing to the predictive algorithms that mold to our digital footprint, STEM is all around us. That's why it's important to build the first fully STEM literate generation, and empower these learners with the knowledge they need to form and fuel their future career endeavors.

Our first-of-its-kind interactive STEM career exploration program meets learners where the ground for STEM career exploration is most fertile -- middle school. With interactive lessons, learners engage with content that reinforces key STEM skills and mindsets while enjoying the freedom and motivation of self-exploration and an interactive learning experience.

For learners who are already interested in STEM, Endeavor feeds their curiosity by providing real world context and content and how they can leverage their skills in a STEM career. For learners do not self-identify as a "STEM Type", Endeavor piques learners' interest by highlighting how STEM concepts and careers connect to topics that interest them, contextualizing and supporting classroom learning with real-world examples.

COURSE STRUCTURE

Endeavor is comprised of two primary components: My Future and STEM in My World. Students begin with the My Future section prior to proceeding to the STEM in My World lessons. STEM in My World lessons can be taken in any order. STEM Careers are woven throughout the course. Please note that individual highlighted careers may vary based on sponsor.

COURSE FLOW

Course Start (My Future)

- Pre-Survey (10 mins)

- About Me Quiz (10 mins)
- My Field Guide Exploration (10 mins)

Lesson Components (STEM in My World)

- Pre-Assessment (3 mins)
- Learning Activity (20 mins)
- Post-Assessment (7 mins)

Course End

- Post-Survey (10 mins)

Implementation

All individual course sections are designed to be completed within one class period. Total course length is estimated between 1.5–2 hours.

Standards Alignment

Endeavor is aligned to the Common Career Technical Core, and the practices from the Common Core State Standards and Next Generation Science Standards. Please see Standards Alignment document for specific lesson and standard alignment.

Grade and Subject Alignment

Endeavor is designed to support CTE curriculum in grades 6–9.

MY FUTURE

The "My Future" section is comprised of two components, the About Me Quiz and My Field Guide.

About Me Quiz

Learners are introduced to the course and complete an interactive self-assessment where they dig deeper into their interests, skills, and aptitudes. Learners connect their resulting STEM profile to several career opportunities.

Based on their responses, learners receive one of four "STEM Types":

- Advisor
- Architect
- Detective
- Producer

Learners may retake the About Me Quiz at any time. If learners retake the quiz and receive a different answer, the Career Connections from the first type will remain in the learner's Field Guide.

Career Connections

After completing the About Me quiz, learners receive their type and two Career Connections that align with their type. These two careers are automatically added to the learner's Field Guide. The career connections include:

- Clinical Research Coordinator (Advisor)
- Project Manager (Advisor)
- Electrical Engineering Technician (Detective)
- Business Intelligence Analyst (Detective)
- Front End Web Developer (Architect)
- UI Designer (Architect)

- Multimedia Designer (Producer)
- CNC Programmer (Producer)

These careers can also be found in the career search function of the Field Guide.

My Field Guide

In this personalized resource, learners explore different career opportunities based on their interests, skills, and course progress. In addition to the careers selected for the learner, learners can also search for additional career opportunities that may be of interest. Learners can access this resource at any point during their course.

The Field Guide is divided into three components:

1. **About Me**
   In this section, learners receive overview information about their "STEM Type" and additional specifics surrounding some of their work preferences. Learners can retake the About Me Quiz from this screen. Icons for skills practiced during the "STEM in My World" lessons also appear in this section.

2. **Career Report**
   When learners indicate their interest in a particular career during a "STEM in My World" lesson, the selected career(s) will appear in this section. Learners can expand the entries to see full career details.

3. **Career Search**
   In the Career Search section, learners can browse additional careers. Learners can filter careers by "STEM Type," educational requirements, or skills required.

FULL CAREER LIST (FOUND IN SEARCH)		
Electrical Engineering Technician	Software Developer	Actuary
Business Intelligence Analyst	Electromechanical Technician	Aerospace Engineer
Front End Web Developer	Data Journalist	Zoologist
UI Designer	Computer Support Specialist	Statistician
Multimedia Designer	Database Architect	Inventory Manager
CNC Programmer	Diagnostic Medical Sonographers	Logistics Manager
Clinical Research Coordinator	Financial Clerk	Transportation, Distribution, Storage Manager
Product Manager	Audio/Visual Technician	Train Crews and Railroad Workers
CNC Machinist	Forensic Scientist	Diesel Service Technicians, Mechanics, and Electricians
Industrial Designer	Video Game Designer	Delivery Truck Driver
Quality Control Analyst	Technical Writer	Robotics or Electro-Mechanical Technicians
Mechanical Engineering Technologist	Pediatrician	Traffic Technicians
Information Security Analyst	Chemist	Industrial Production Managers
Data Scientist	Cartographer	

Career Cards

Career Cards are static content or videos that provide insight into a particular career path. Career information is based on data from the US Department of Labor (where available). Career Cards contain the following information:

- Basic description
- One or two sample projects
- Average educational requirement
- Average national salary
- Skills required (selected)
- Recommended classes
- What a learner can do now, and down the road, to prepare for this career

After reviewing this information, learners have the opportunity to add a particular career to their Career Report.

STEM IN MY WORLD

The "STEM in My World" lessons encourage learners to explore novel applications of STEM in their surrounding world. Through active exploration of different STEM environments, students tackle challenges faced by real STEM professionals. This section contains three interactive lessons, Designing the Ultimate Prototype, Building the Perfect Playlist, and Connecting the Home of the Future.

Main Street

Once they have completed the About Me Quiz and visited their Field Guide, learners return to Main Street. From Main Street, learners can enter any of the buildings to begin a lesson. Also on Main Street, learners can retake assessments, resume previously started lessons, and directly access their Field Guide or Quick Navigation Menu.

Pre and Post Assessments

Each of the "STEM in My World" lessons contains pre and post -assessments related to the content areas explored in the lesson. Upon completing each post-assessment, learners receive feedback regarding which questions they answered incorrectly. Learners can also retake assessments from the Main Street Homepage.

General Lesson Structure

The interactive lessons are designed to immerse learners in the novel applications of STEM in their world. In each lesson, learners assume a particular role and must solve discrete challenges that mirror the everyday tasks of someone in that career.

Lesson Start	Intro Activity	Career Connection	Main Activity	Reflection	Career Connection	Learner Field Guide/ Lesson End

Sample Lesson Activity Flow

Each lesson begins with an introduction, followed by a five-question pre-assessment. After completing the pre-ssessment, the learner learns of their primary objective for the lesson. The learner then completes a short activity. After completing the mini activity, the learner learns of the skill practiced during the activity (for example, critical thinking), and is connected to a related career that utilizes that skill. After reviewing the Career Connection, the learner has the option to add the highlighted career to their Field Guide.

The learner then continues through the lesson, completing several additional tasks in the service of solving their central mission. After the learner successfully completes the activity, the learner is asked to reflect on what they enjoyed most about the preceding activity. The learner is directed to a Career Connection that relates to their stated interest.

The learner is asked to indicate if they are interested in the particular career. If they are interested, the career is added to the learner's Field Guide. If not, the learner is directed to an additional career. This process repeats up to three times total.

After the Career Connection, the learner learns of some of the skills practiced during the lesson that connect to potential career opportunities. These skills practiced are added to the About Me section of the learners' Field Guide.

Each lesson concluded with a ten-question post-assessment. At the conclusion of the post-assessment, learners receive follow-up information about the questions they answered incorrectly. The passing score for each post-assessment is 70%. Learners may retake the post-assessment from the Main Street home screen.

DETAILED COURSE OUTLINE

Lesson: Designing the Ultimate Prototype

Learners explore advanced manufacturing techniques by designing and rapidly prototyping a custom sneaker. Through iterative design, learners will link the design process to the high-tech manufacturing techniques shaping the future of production. Learners will connect these skills to STEM careers in engineering and/or which require design and programming skills.

Approximate Length: 20 minutes

TOPICS COVERED	SKILLS PRACTICED	FEATURED CAREERS
Engineering Design Process	Critical Thinking	CNC Machinist
Materials and material science	Time Management	Industrial Designer
3D printing process	Creativity	Quality Control Analyst
STEM Career Exploration		Mechanical Engineering Technologist

Lesson: Connecting the Home of the Future

Learners explore a high-tech world by calibrating a connected home. Using a variety of data sources to achieve optimal settings, learners will adjust their smart thermostat, lighting control system, and intelligent refrigerator. For each of these activities, learners will interpret basic data sets (from utility bills, fitness tracker data, etc.) to make cost and energy-efficiency decisions. Learners also briefly explore the importance of protecting their personal information when using connected devices.

Approximate Length: 20 minutes

TOPICS COVERED	SKILLS PRACTICED	FEATURED CAREERS
Classifying data	Problem Solving	Information Security Analyst
Interpreting/ analyzing data	Decision Making	Data Scientist
Password security	Analysis	Software Developer
Connected devices/IoT		Electromechanical Technician

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TOPICS COVERED	SKILLS PRACTICED	FEATURED CAREERS
STEM Career Exploration		

Lesson: Building the Perfect Playlist

Learners act as curation engineers at a music software company, analyzing content and user data to determine a perfect playlist. Along the way, they learn about how recommendation engines collect information about users from online behavior.

Approximate Length: 20 minutes

TOPICS COVERED	SKILLS PRACTICED	FEATURED CAREERS
Classifying data	Troubleshooting	Video Game Designer
Interpreting/ analyzing data	Active Listening	Data Journalist
Content filtering	Information Technology	Computer Support Specialist
Collaborative filtering		Database Architect
STEM Career Exploration		

Lesson: Medical Machines

Learners act as a doctor at a medical practice, gathering and analyzing patient information to diagnose each patient. Along the way, they learn how to use diagnostic tools and medical machines to make an accurate diagnosis and understand the day-to-day job of a doctor.

Approximate Length: 20 minutes

TOPICS COVERED	SKILLS PRACTICED	FEATURED CAREERS
Gathering patient data	Critical Thinking	Actuary
Analyzing patient history	Decision Making	Radiographer
Conducting physical exams	Science	Health Office Manager
Diagnostic machines		Nurse
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Lesson: Data Champions

Learners are faced with data-related challenges and learn how to reach a certain outcome by using data. Through problem-based learning, learners will compare sets of data, prioritize data in decision-making, and manipulate data. Learners will connect these data analysis skills to STEM careers which require research, the scientific method, and analysis of data.

Approximate Length: 20 minutes

TOPICS COVERED	SKILLS PRACTICED	FEATURED CAREERS
Qualitative and quantitative data	Data Analysis	Agriculture Technology
Bivariate data	Problem Solving	Research and Development
Make decisions using data	Using data to predict outcomes	Social Entrepreneur

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TOPICS COVERED	SKILLS PRACTICED	FEATURED CAREERS
Technology & data collection		Digital Healthcare Leader
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Lesson: Game Development Studio

Learners are shown the game design process using best practices in software development. Through the lens of a game producer learners are asked to problem solve, apply and use tools to get work done, and to make decisions within defined limitations.

Approximate Length: 25 minutes

TOPICS COVERED	SKILLS PRACTICED	FEATURED CAREERS
The software development process	Planning	Game Producer
The video game design process and roles	Problem Solving	Software Engineer
Build and maintain a timeline	Active Listening	Scrum Master
Computer science terms		Game Artist
Evaluate and apply decision-making criteria		Gaming Analyst

Lesson: Transportation Central

Learners explore the industry of transportation, distribution, and logistics (TDL) through a simulation detailing the events that occur between customers placing an order for a product through delivery. Learners must use industry best practices to solve common problems along the way.

Approximate Length: 25 minutes

TOPICS COVERED	SKILLS PRACTICED	FEATURED CAREERS
Inventory and Logistics	Problem Solving	Inventory Manager
Inventory Management and Other Industry Best Practices	Collaboration	Logistics Manager
Packaging, Shipping, and Handling	Using Technological Advancements	Transportation, Distribution, Storage Manager
Transportation and Transportation Maintenance	Using Industry Best Practices	Train Crew
STEM Career Exploration	Math & Calculation Skills	Diesel Mechanic
	Attention to Detail	Diesel Electrician
	Decision Making	Delivery Truck Driver
	Adaptability	Robotics or Electro- Mechanical Technicians
		Traffic Technicians
		Industrial Production Managers

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