ozobot

Middle School Pacing Guide

Overview

The **Ari Pacing Guide** is a resource designed to guide educators as they integrate Ari into their classrooms or programming.

Within each grade band, you will find a curated selection of lessons aligned to the corresponding content standards. We recommend starting with our 'Meet Ari' lessons, included in each grade, to build a foundational understanding of the coding and programming concepts used with Ari.

From there, use your grade-level guide as a lesson playlist. We've arranged the lessons in a suggested order based on their progression in coding and robotics skills, but you can choose the ones that best align with your instructional goals and content focus.

Lesson	Objective	Standard
1 Meet Ari: Hardware, Software, and Apps (5-12)	Students will learn the basic functions of Ari and demonstrate their ability to use the software for learning applications. Students will understand the capabilities of 13 hardware components on Ari and identify the location of each on a diagram.	**CSTA.3A-CS-01** Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects.
2 Meet Ari: Color Codes (5-12)	Students will program Ari using Color Codes and the Color Codes app, by enabling the robot to perform specific actions and navigate through the track. Students will demonstrate their problem-solving skills by analyzing which Color Code will enable Ari to move from start to finish.	**CSTA.2-CS-02** Design projects that combine hardware and software components to collect and exchange data.
3 Meet Ari: The Ozobot Editor (5-12)	Students will learn how to navigate and use the Ozobot Editor, including selecting, editing, deleting, duplicating, and customizing blocks to create block-based programs. Students will write pseudocode to plan the sequence of actions Ari will perform, then use the Ozobot Editor to translate their pseudocode into a functional program. Students will demonstrate their understanding of coding concepts by programming Ari to perform a sequence including movement, light effects, sounds, timing, and loops.	**CSTA.2-AP-10** Use flowcharts and/or pseudocode to address complex problems as algorithms.
4 Floor Plans and Scale	Students will measure the dimensions of the rooms in a house based on a floor plan. Students will calculate the real-life sizes of each room using the provided information.	**CCSS.MATH.CONTENT.6.RP.A.3** Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

Lesson	Objective	Standard
5 Rolling for Speed	Students will construct three inclined planes using the provided classroom materials. Students will time a ball's travel down each inclined plane and use the formula speed = distance / time to calculate the ball's average speed.	**NGSS.MS-ETS1-4** Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
6 Measuring Modes	Students will measure the lengths of all of their classmates' shoes using the Ari distance application. Students will find the mean, median, and mode values in the collected data. Students will organize and graph their results in a histogram. Students discuss different careers that use data collection and analysis.	**CTE. ST-ET 2.1** Select and use information technology tools to collect, analyze, synthesize and display data to solve problems.
7 2D & 3D Shapes: Area, Perimeter, Surface Area, Volume	Students will cut out four different shapes using the provided paper. Students will measure the necessary measurements to calculate the area and perimeter of the shapes.	**CCSS.MATH.CONTENT.7.G.B.6** Solve real-world and mathematical problems involving area, volume and surface area of two and three dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
8 Potential Energy in Rollercoasters	Students will cut out and fold roller coaster tracks. Students will construct multiple roller coaster tracks of varying heights and tape them to the wall. Students will calculate the gravitational potential energy of the marble at the top of each roller coaster.	**NGSS.MS-PS3-2** Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

Lesson	Objective	Standard
9 Architecture Mapping	Students will measure 2D architectural representations using the Ari distance application. Students will calculate the area and perimeter of 2D architectural representations. Students will construct 3D models of pieces of architecture and calculate their surface area and volume.	**CTE.AC 6.3** Use architect's plan, manufacturer's illustrations and other materials to communicate specific data and visualize proposed work.
10 Distance Formula with Ari	Students will learn how to find the x and y coordinates of an object using Ari's distance sensor. Students will calculate the distance between two objects given their coordinates.	**CCSS.MATH.CONTENT.8.G.B.8** Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
11 Solar System Model with Ari	Students will learn how to scale based on a scale factor. Students will create a scale model of the solar system with the help of Ari.	**NGSS.MS-ESS1-3** Analyze and interpret data to determine scale properties of objects in the solar system.
12 Mapping a Floor Plan	Students will learn how to create a floor plan with common elements like walls, doors, windows, and furniture. Students will create a floor plan of their classroom space.	**CTE AC-DES 6.1** Apply basic organizational, spatial, structural, and constructional principles to the design of interior and exterior space to produce an effective design.