ozobot

High 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 Pythagorean Theorem with Ari	Students will learn how to use the Pythagorean Theorem to calculate unknown side lengths of triangles. Students will use Ari to measure and calculate the dimensions of objects.	**CCSS.MATH.CONTENT.HSG.SRT.C.8** Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

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5 Kinematics in Two Dimensions	Students will learn the relationship between distance, time, velocity, and acceleration. Students will conduct an experiment to calculate acceleration due to gravity.	**NGSS.HS-PS2-1** Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.
6 Stealth Object Design	Students will learn how stealth technology works. Students will investigate various materials to determine how well they work with Ari's distance sensor.	**CTE.ST-ET 6.5** Explain relevant physical properties of materials used in engineering and technology.
7 Ari Tells Height	Students will learn the sine, cosine, and tangent trigonometry functions. Students will calculate their heights based on an angle and a side length.	**CCSS.MATH.CONTENT.HSG.SRT.C.6** Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
8 Self-Driving Cars	Students will learn how self-driving cars create a visual representation of the world. Students will create a point cloud of Ari's surroundings using the distance app.	**CTE.ST 2.2** Use modeling, simulation, or visual reproduction to effectively analyze, create, and/or communicate to others regarding plans, projects, problems, issues, or processes.

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9 Time-of-Flight Sensors	Students will learn how a time-of-flight (ToF) sensor works. Students will have to map out a course using Ari's distance readings.	**NGSS.HS-PS4-4** Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.