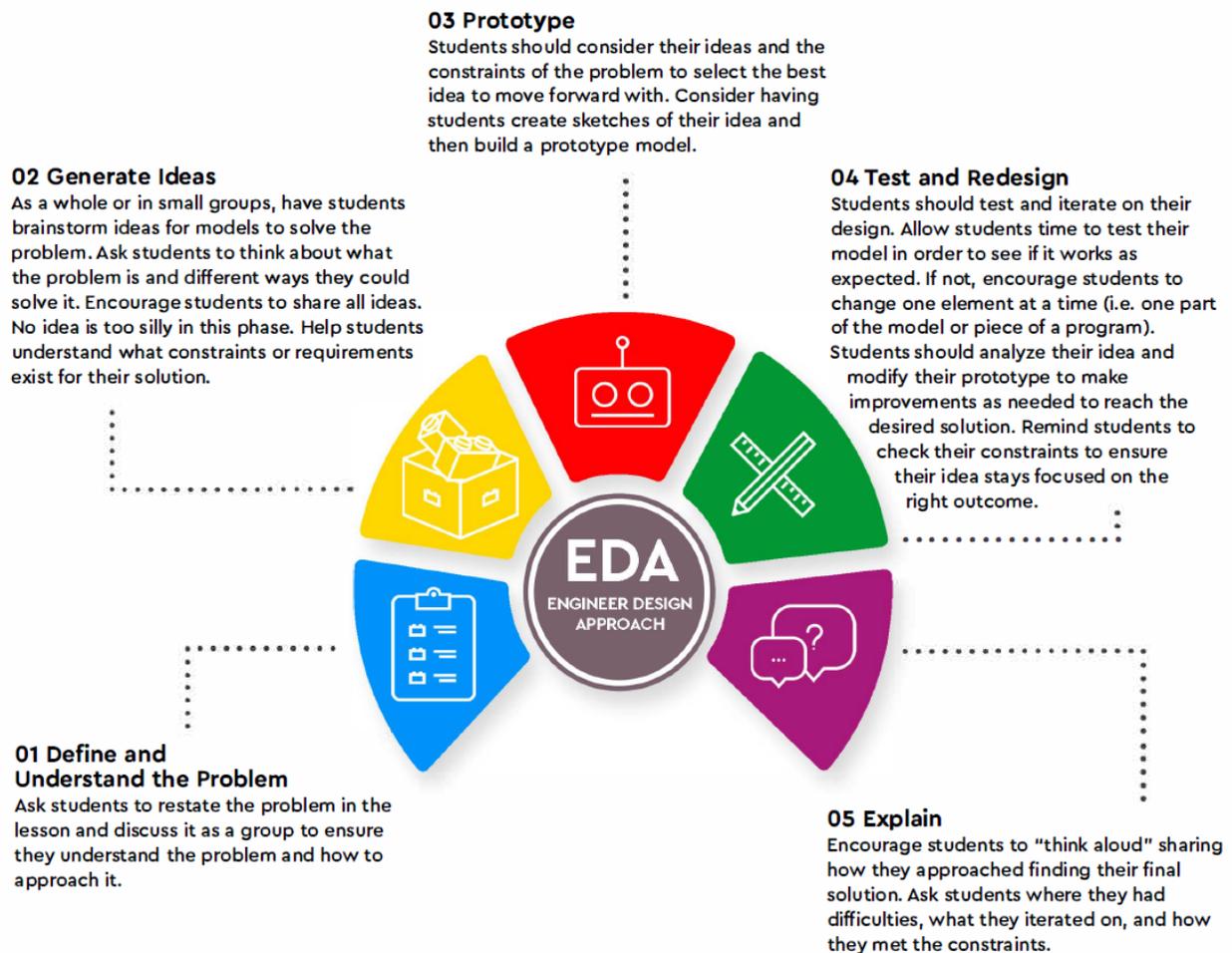


Looking for ideas on how your students can code for good to create real-world impact and change? Check out these lessons to inspire new concepts, prototypes and functional projects that will have real-world impact.

Use these lessons to scaffold and inspire imaginative and creative ideas that your learners will want to share with the world. Then use the prompts to inspire your builders to create new and unique ways to code for good.

Engineering Design Approach

The Engineering Design Process describes the phases that an engineer uses to move from an idea to a solution. Use the design process and computational thinking skills to address real-world problems and create solutions that can be coded and shared.



PreK-2 – Coding for Good

Lessons to inspire concepts, prototypes and programs that solve real world problems

Grades	Materials and Resources	Lesson Plan – Use this to get inspire ideas about coding for good	Design and Coding – How this connects to coding	Coding for Good Inspiration Prompt
PreK	My XL World	<p>Practicing good dental health is an important first step to a lifetime of healthy practices.</p> <p>Create a Dentist's Office to explore how health care workers help people stay healthy.</p>	<p>Build a Dentist Office and learn about a dental check-up.</p> <p>Use the Dental Office model to explore dental health. How can more people learn about dental health? What kind of application could help others in the community access dental health and learn about dental hygiene?</p>	<p>Create your own unique concept to help address health problems in your community.</p> <p>Build an audio-visual presentation to share your concepts or create a prototype or simple program to share your ideas with others.</p>
K	Coding Express	<p>Using transportation like trains and cars helps communities by providing access to school, business, and work.</p> <p>Explore unexpected problems on a commute in this Journey on a Troubled Road.</p>	<p>Build your community and create a train to help people get around town.</p> <p>Use Analog Code Blocks to code the movement of the train. What problems do you need to solve to make the journey safe for everyone?</p> <p>Describe the design and code you used to solve the problems and share with others in a presentation.</p>	<p>Create a design to solve problems that happen when people commute in your neighborhood.</p> <p>Build an audio-visual presentation to share your concept or design a prototype that shows how to use code to improve travel in your community.</p>
1	SPIKETM Essential	<p>Games are a wonderful way to have fun while connecting with family and friends.</p> <p>Explore Bowling Fun by building a bowling game you can play with others.</p>	<p>Design a bowling machine to launch a ball at bowling pins.</p> <p>Use Icon Block coding to program the machine to get a strike.</p>	<p>Create a community game that will bring together friends to connect over fun challenges.</p> <p>Share your game with an audio-visual presentation or build a model of your game program. You can also collaborate with a team to build a complete program to share with the world.</p>
2	SPIKETM Essential	<p>The environment is important to the unique animals and plants in our world.</p> <p>Design an Animal Alarm to discover the animals that move around at night.</p>	<p>Design an Animal alarm to learn about the animals that move around at night.</p> <p>Use Icon Block coding to program the alarm that lets you observe the animals without chasing them away.</p>	<p>How can you help others learn about animals in your environment and the impact humans have on their habitats.</p> <p>Create a concept, prototype, or computer program that helps others think about the needs of animals and plants in your community.</p>
All Ages	Any LEGO® Bricks	<p>Building bridges let us people connect when separated by obstacles.</p> <p>Design a bridge that connects people separated by an obstacle.</p>	<p>Design a bridge that can connect two places separated by a highway, a river, or an ocean.</p> <p>Think about the functions your bridge needs. Develop a pseudocode to describe bridge features like raising or lowering, using lights, and directing traffic.</p>	<p>Design a bridge that connects people together allowing people to travel, explore, and work anywhere.</p> <p>Share your ideas with a presentation or build a prototype or functioning program that demonstrates your creative concepts.</p>

3-5

Lessons to inspire concepts, prototypes and programs that solve real world problems

Grades	Materials and Resources	Lesson Plan – Use this to get inspire ideas about coding for good	Design and Coding – How this connects to coding	Coding for Good Inspiration Prompt
3	SPIKE™ Essential	<p>Playing is entertaining and helps us understand and build relationships while having fun!</p> <p>Explore a High-Tech Playground and redesign a ride so everyone can play together.</p>	<p>Build a high-tech playground for that everyone can enjoy.</p> <p>Use Word Block coding to program the playground and amend make rides more accessible and fun for all ages.</p>	<p>Think about playground spaces in your community. How can we use technology to improve the playground spaces to be fun and entertaining for everyone.</p> <p>Describe our concept in a presentation or build a prototype or functional playground to share your creative ideas with others.</p>
4	SPIKE™ Essential	<p>Robotic technology is used to make robots that make it easy to move from one place to another.</p> <p>Design a Big Little Helper to gather and move many items from school to home in one trip.</p>	<p>Build an assistant robot to help move personal items from school to home. Redesign the robot to make it a more efficient helper.</p> <p>Use Word Block coding to program routines for the robot to complete. Use design thinking to improve the robot to move items more effectively.</p>	<p>Many devices in your home and community help you complete difficult tasks more easily. How can you use your CS skills to help accomplish tasks?</p> <p>Present your concept with a song or visual storyboard or make a prototype or functioning model so others can experience your innovations.</p>
5	SPIKE™ Essential	<p>Sorting out garbage is an important way to help protect the environment and reduce waste.</p> <p>Create a Trash Monster Machine to automate the task of sorting trash.</p>	<p>Design a trash monster machine to help you sort garbage.</p> <p>Use Word Block coding to automate the steps of sorting trash. Use design thinking to revise your program to sort diverse types of garbage that will help reuse and recycle materials and reduce waste.</p>	<p>Learn about how your community sorts garbage to reduce waste and promote reusing and recycling materials. Can you design a program that will improve the process?</p> <p>Share your computer program concepts in a story or visual presentation or create a prototype or functional program to demonstrate your concept.</p>
All Ages	Any LEGO® Bricks	<p>A password is the best way to protect valuable information about yourself.</p> <p>Use LEGO® Bricks to explore weak and strong passwords.</p>	<p>Choose a color brick to be your password. How quickly can a partner guess? How many color bricks do you need to make a strong password that no one can guess?</p>	<p>Passwords keep information safe. Can you design a program that helps you protect valuable information with a strong password?</p> <p>Use a presentation to share your ideas about creating passwords with others. Create a prototype or functioning program that helps others make strong passwords and keep them safe.</p>

6-8

Lessons to inspire concepts, prototypes and programs that solve real world problems

Grades	Materials and Resources	Lesson Plan – Use this to get inspire ideas about coding for good	Design and Coding – How this connects to coding	Coding for Good Inspiration Prompt
6	SPIKETM Prime	<p>Businesses use technology to help complete operations, like sending things to customers.</p> <p>Design a machine to help a business send a package when someone Places and Order .</p>	<p>Build a quality check machine that a business can use to help fulfill orders, making sure that everyone is happy with the final delivery.</p> <p>Use Word Block coding to program the motors and sensors to check the quality of an order and sort good items from poor quality items. Work together to redesign the program to work more effectively.</p>	<p>Explore the types of processes businesses use to take orders from customers and ship high quality materials. How can you improve these processes for businesses and customers?</p> <p>Outline your proposed program in a presentation or build a prototype or functioning program to show how code can improve the process of ordering and shipping materials.</p>
7	SPIKETM Prime	<p>Autonomous driving vehicles are used around the world to support manufacture and daily life.</p> <p>Explore the technology to go Driving Around in an autonomous car.</p>	<p>Build and program a car that can navigate an obstacle course independently. Think about the information you need to get passengers to a destination safely.</p> <p>Use Word Block programming to program a vehicle to make precise and controlled movements while navigating around several types of obstacles.</p>	<p>Review how cars and other transportation navigate your community. What kinds of obstacles or challenges need do you need to address to achieve successful autonomous transit that everyone can use?</p> <p>Describe your designs in an audiovisual presentation or create a prototype or functioning program that can help people travel safely in your neighborhoods with autonomous systems.</p>
8	SPIKETM Prime	<p>A coach is an important expert who understands physical health and can give information and directions to help others stay healthy and fit.</p> <p>Design a Coach to help you improve your physical fitness routine.</p>	<p>Design and program a coach that can help you during a physical fitness routine by counting repetitions of exercises or giving positive feedback to keep you motivated.</p> <p>Use Word Block coding to create the program for your coach. Consider the types of information and feedback a coach can provide that is useful when exercising.</p>	<p>Explore ways in which people stay physically healthy in your community. How do parks, gyms, and daily activities like walking help people stay fit? What computer programs could you create to promote healthy activities.</p> <p>Share your ideas for improving physical health in a presentation. You can also build a prototype or functional program that will help you and your community stay healthy and fit.</p>
All Ages	Any LEGO® Bricks	<p>Dance parties are fantastic entertainment for friends, family, and your community.</p> <p>Create and Code Your Moves for an dancing robot, or a dance party of your design.</p>	<p>Design a dancing robot or machine by drawing and writing the instructions for the dance. Then decompose the steps into smaller parts that you can use to create code.</p> <p>Use Pseudocode to prepare your dancing program for your dancing machine. Consider diverse ways to design the pseudocode to bring your dance to life.</p>	<p>Think about dances that bring your joy and make others around you happy. What kind of robot or experience could you create with code to share the happiness of dance with others?</p> <p>Publish your ideas in a presentation or create a prototype or functional program to share your creative dance ideas with others.</p>