{k}kidsk{:}de Curriculum Guide K-6

The VEHICLE FOR CHANGE **KIDSKODE** programs are for GIRLS and BOYS that love to use their imaginations and creativity to build, craft, program and have a blast! Our programs are designed and supervised by **educators** with both experience and passion for teaching STEM related concepts and principles. Better yet, we understand the importance of **ENGAGING** kids in learning and enabling them to not only master skills but further pursue knowledge and careers in STEM related fields. Our activities include a variety of designs and challenges to help kids explore the power of creativity and innovation.

Curriculum Focus:

- The 3 C's: Communication, Collaboration, Critical Thinking
- Beginning and advanced computer coding and robotics
- Engineering tasks which are designed for K - 6
- Team building to encourage and enhance collaboration
- Activities that support standards in math and science
- Having fun & making friends

KidsKode Enrichment 2023/2024: Each of the sessions listed below consists of **four (4) 1-hour classes**. This is not necessarily indicative of the order in which these classes will occur during the school year.

Kindergarten - 3rd Grade

1. Navigating Neptune with OzoBot
2. Lego WeDo Milo Adventures
3. Lego Zoo Adventure
4. 3-2-1 Blast Off
5. Scratch Jr. Coding Quest
6. Monster Maze Code Candy
7. Energy Explorers
8. Imagination Station

4th Grade - 6th Grade

1. OzoBot Evo 3-D Maze Challenge
2. Lego WeDo Life Hacks
3. Lego Mindstorms SugoBots
4. Rocket Science Space Odyssey
5. Coding with Google & Scratch
6. Video Game Designers
7. Tomorrow's Engineers
8. Tinker, Code, Build with Micro:Bit

For more information about KidsKode Enrichment, please contact: Wesley Foster at 877-841-1110 or visit our website to learn more about each of the sessions.

www.kidskode.com

Kindergarten - Second Grade

1. Navigating Neptune with OzoBot

Students will use color codes to create a flight path for the mission to Neptune. The object of the game is to be the first team to reach Neptune by completing drawing challenges!

Students will program their Ozobot to navigate the solar system on their way to Neptune. Students will cut out and assemble the paper planets on their OzoBoards. Students will practice drawing lines and color codes that Ozobot can follow to navigate around the solar system. Along the way students will learn some interesting facts about neptune and our solar system. Both luck and skill play a role through a series of fun timed challenges that require them to combine shapes and color codes. As students are successful, they will get to move closer to their destination.

While playing, students will learn how to use and program Ozobot. When using some of the variations to this game, they will also train their strategic and logical thinking. Students will need to collaborate to figure out which way Ozobot has to go and use directional codes to program Ozobot's path.

Students will

- Learn about different types of robots.
- Discover how ozobot senses its environment and move in it.
- Learn visual programming by creating commands for ozobot to follow.
- Be able to identify planets and learn how they move in relation to one another.

Curriculum Focus

- Robotics: line-following and color sensing
- Computer science: visual coding
- Inter-disciplinary: robotics, physics and math come together over the course of 4-weeks.

Teams must use each one of these Ozobot Codes to complete their mission:

- Turbo speed
- Go right
- End Line U Turn
- Snail Pace
- Win/ Exit (Stop)
- Go left
- Tornado

Ozobot Bit is a mini robot that in a didactic and entertaining way, introduces children to the world of logic, robotics and programming, essential skills for the new generations. It has sensors that detect and understand colors as code; called OzoCode.

Kindergarten - Second Grade

2. Lego WeDo Milo Adventures

Robotics using LEGO® Education WeDo 2.0 makes science and engineering come to life through hands-on tasks, real-world projects, and relevant technology that engages students. Through this project-based activity, students' skills are enhanced across science, engineering and technology. Each project will empower students to ask questions, define problems, and design their own solutions by putting scientific discovery in their hands.

Scientists and engineers have always challenged themselves to explore remote places and make new discoveries. To succeed in this journey, they have designed spacecraft, rovers, satellites, and robots to help them see and collect data about these new places. They have succeeded many times and failed many times, too.

Students will

- Read Max and Mia's story to understand the topic and set the stage for group discussion.
- Use the ipad to follow the building instructions to create Milo
- Connect the model and device
- Program the motion sensor to detect motion
- Create the program by dragging and dropping the relevant program block(s) onto the screen.

Curriculum Focus

- Students will learn what scientists and engineers do when they cannot go where they want to explore. Scientist and engineers take these situations as challenges they want to solve. With proper resources and commitment, they will develop prototypes as possible solutions and ultimately choose the best option.
- Students will see that failure is a chance to learn more.
- Once the students have created and run their programs, they should be able to explain the program and the function of the robot. They should be able to answer questions like:

  -How does the program work

  -What do the different program blocks do?

LEGO® WeDo 2.0 is a robotics hardware and software platform specifically designed for Kindergarten to Grade 2 students. LEGO® bricks are naturally engaging to kids. By the end of the session students will be able to build and program LEGO® models featuring working motors, motion and tilt sensors. As with other LEGO Education products it follows the 4 C's process – Connect to a story, Construct a model, Contemplate its function, and Continue improving its design.

Kindergarten - Second Grade

3. WeDo Zoo Adventure

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Students will explore Zoo Life and design Wildlife Crossing structures that allow animals to cross human-made barriers safely. Wildlife crossings include underpasses, tunnels, and viaducts. Rescue vehicles are also used in extreme or difficult cases.

Students will

- Explore existing wildlife crossings.
- Share specific examples of situations or conditions in which wildlife is put at risk and a crossing may be a solution.
- Use the ipad to follow the building instructions to create rescue machines, structures and animals.
- Connect the model and device.
- Use program blocks to write the code for each prototype.
- Present each solution, and explain how the crossing has been designed with a particular animal in mind.

Curriculum Focus

- Students will design and build a wildlife habitat and crossing for a chosen animal.
- build the road or hazard that the safe crossing is designed to avoid.
- Students will explore the Design Library so they can choose a model for inspiration. Then experiment and create their own solutions, modifying any basic model as they see fit.

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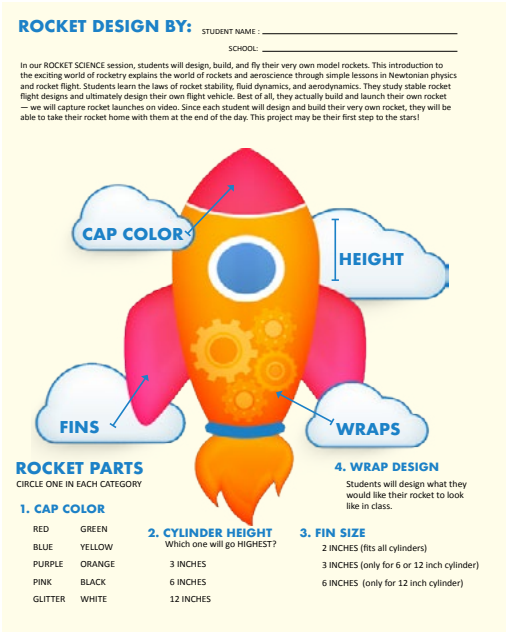
Kindergarten - Second Grade

4. 3-2-1 Blast Off

Students will learn about AERODYNAMICS by experimenting with different types of flight vehicles. Students will use what they know about force and motion to design planes and rockets that will fly the farthest. In the first class students use technology to research and design a paper airplane. They will apply the scientific design process to test and adjust their original designs, and in the end, choose a design that they think will fly the farthest in a class airplane race! The next 3 classes will be rocket science. Each student will design and build their own rocket and learn about Newton's Third Law of Motion.



Students will

- Design at least two different paper airplanes.
- Modify one of their designed airplanes in an attempt to improve its flight.
- Become familiar with parts of a paper airplane and how they relate to parts on a real airplane.
- Apply Newton's third law of motion to explain how a rocket launches.
- Explain the difference between air propellant and fuel.

Curriculum Focus

Students will use the engineering process in the following ways:

Science: Use Experimental Design.

Technology: Use resources from the internet to investigate various paper airplane folding techniques.

Engineering: **Class 1-** Design your own paper airplane.
Class 2 & 3 - Design and Build a model rocket
Class 4 - Rocket Launch

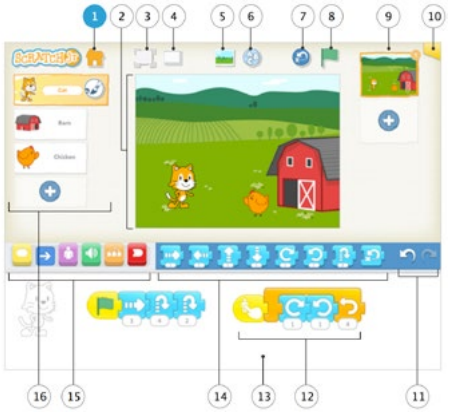
Math: Use standard units of measurement to determine the distance the vehicles flew.

Kindergarten - Second Grade

5. Scratch Jr. Coding Quest

Children snap together graphical programming blocks to make characters move, jump, dance, and sing. Children will modify characters in the paint editor, add their own voices and sounds, and insert photos of themselves -- then use the programming blocks to make their characters come to life.

Scratch Jr. introduces powerful ideas from engineering and computer science that are not usually highlighted in early childhood education. Powerful ideas may be applied to many disciplines and will be rewarding in students' academic and personal futures.



Students will

- Program characters to move at different speeds.
- Use numbers on motion blocks to reduce the number of motion blocks used.
- Use the repeat and repeat forever blocks to make a program repeat.
- Record sounds and add them to projects.
- Create speech bubbles for characters.
- Add additional pages to a project.
- Pause a character's program for a certain amount of time.
- Create their own interactive story and game to share.

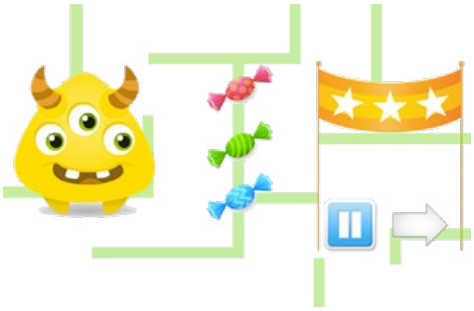
Curriculum Focus

Through a colorful and engaging jigsaw puzzle style application, Scratch Jr. gives primary students the opportunity to learn the basics of coding in a creative, friendly learning environment. With a limited text interface, it gives the youngest of learners the opportunity to successfully build interactive programming stories by clicking coding blocks to express their creativity.

Scratch Jr. is an introductory programming language that enables young children (ages 5-7) to create their own interactive stories and games. ScratchJr was inspired by the popular Scratch programming language (scratch.mit.edu), used by millions of young people (ages 8 and up) around the world. In creating ScratchJr, the creators redesigned the interface and programming language to make them developmentally appropriate for younger children, carefully designing features to match young children's cognitive, personal, social, and emotional development.

Kindergarten - Second Grade

6. Monster Maze Coders



Students will expand their programming skills by moving up to the Scratch 2.0 programming language. Students will be programming a monster maze game in Scratch. The main goal of this game is to program their monster to be able to navigate through a maze they create and pick up the candy on the way. Students will then share their maze game with each other.

Students will

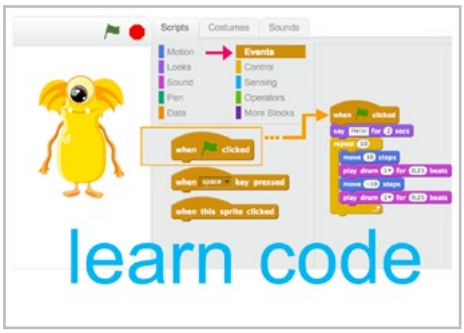
- Express movement as a series of commands.
- Order movement commands as sequential steps in a program.
- Represent an algorithm as a computer program.
- Count the number of times an action should be executed and represent it as instructions in a program.

Curriculum Focus

Before we join the Scratch community we will spend some time going over online safety. Students learn that they can go to exciting places online, but they need to follow certain rules to remain safe. By taking a virtual field trip, students experience the power of the Internet to take them to places they might not be able to visit in person. They learn that they should follow safety rules when they travel online, just as when traveling in the real world.

In creating their maze in Scratch students will focus on:

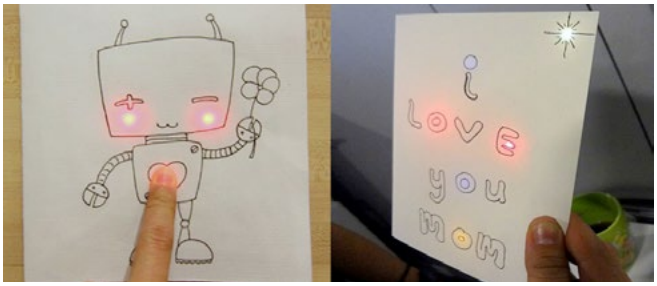
- Creating a program which uses sensing.
- Using sensing to effect change.
- Dragging blocks to make scripts
- Creating animations by changing costumes
- Add and change a background



Scratch is a programming language and an online community where children can program and share interactive media such as stories, games, and animation with people from all over the world. As children create with Scratch, they learn to think creatively, work collaboratively, and reason systematically. Scratch helps young people learn to think creatively, reason systematically, and work collaboratively — essential skills for life in the 21st century.

7. Energy Explorers

Electricity can seem like a big mystery. We can't see it, we can't smell it and we can't touch it. It is very hard to tell whether or not it exists! In this session, students will explore electricity and how circuits work. They will use Snap Circuits to learn about electrical circuits. Students will also design and create a light-up greeting card using construction paper, copper tape and surface-mount leds.



Students will learn

- That a circuit always needs a power source, such as a battery, with wires connected to both the positive (+) and negative (-) ends. A battery is also known as a cell.
- That a circuit can also contain other electrical components, such as bulbs, buzzers or motors, which allow electricity to pass through.
- Electricity will only travel around a circuit that is complete. That means it has no gaps.

Curriculum Focus

1. Students will work in teams of 3 - 4 to build several simple circuits and explore electricity using "Snap Circuits, Jr." kits. Each pair of students should be able to make each type of circuit. When students have completed each type of circuit, they will have time to apply what they learned to create their own.
2. Creating paper circuits can teach not only the basics of electronic circuitry, but also about design, iteration, troubleshooting, collaboration, creative expression, and more.
3. Students will also learn how to be safe around electricity.

Snap Circuits

Snap Circuits® uses building pieces with snaps to assemble different electronic circuits on a simple "rows-and-columns" base grid that functions like the printed circuit board found in most electronic products. Each component is easily identifiable by a different color and functional purpose.

Snap Circuits® makes learning electronics easy and fun! Just follow the colorful pictures in our manual and build exciting projects such as a flying saucer, alarms, doorbells and much more!

Kindergarten - Second Grade

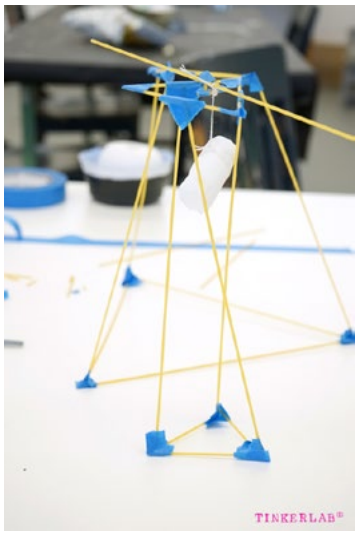
8. Imagination Station

Students will develop their analytical skills and become more aware of the world around them when they discover that everyday objects can be improved and redesigned (by them) to create something new and useful. The Imagination Station will provide a variety of experiments and projects that will explore new and unique STEM-related challenges throughout this session.

Building Bridges

Students explore why bridges are shaped differently. Students distinguish between beam, arch, and suspension bridges and learn how bridge designs counteract and redirect forces and motion. In the culminating design challenge, students design, construct, and test their own bridges.

(2 classes)



Curriculum Focus

- Understand the importance of teamwork and failure in science and engineering.
- Understand that some shapes are stronger than others.
- Understand that even weak materials can be made stronger with good design techniques, and that distribution of mass is an important consideration when building a tower.
- Understand that compression and tension affect the stability of a structure.
- Compare their model to others to understand why some models are stronger than others.
- Understand why engineers consider tension and compression forces when designing a building or structure.
- Matter exists in three states: solid, liquid, gas.
- Temperature can affect the state of matter of a substance.
- Changes in the properties or materials of objects can be observed and described.

Spaghetti Marshmallow Challenge

This fun design/build exercise teaches some simple but profound lessons in collaboration, innovation, hidden assumptions, and creativity that are central to the engineering process.

Homemade Ice Cream

Awesome, yummy science with homemade ice cream! Students will explore and defined matter as anything that has mass and takes up space. In this lesson the children will change matter from liquid to solid by changing the temperature. They will discover that energy causes the matter to change. They will also practice following directions and measuring with accuracy.

Third Grade - Sixth Grade

1. OzoBot Evo 3-D Maze Challenge

Ozobots are tiny line following robots that can be coded to perform certain tasks using color codes. With Evo and OzoBlockly, students will program Ozobots using the Blockly platform which will allow students to create code with more complex instructions. Using Ozoblockly, students program Ozobot Evo to follow a path and travel through a maze that they have created.

Students will

- Learn about different types of robots.
- Learn how does ozobot evo sense its environment and moves in it.
- Learn how to give commands using ozoblockly.
- Write a program on the computer and load the instructions onto ozobot.
- Bring together the observations from the prototypes and discuss a list of findings.
- Consider ways to make a more complicated maze – e.G. With tunnels and ramps and obstacles.

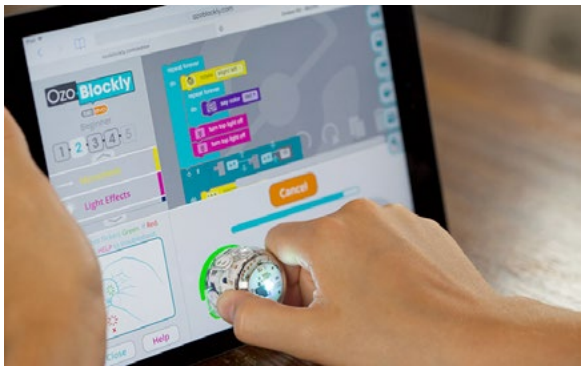
OzoBot Evo & OzoBlockly

Ozobots are tiny line following robots that blend the physical and digital worlds — and teaches kids programming. **OzoBlockly** is a graphical drag and drop language. OzoBlockly supports line-following and color reading behaviour and allows you to control the robot's movement and RGB LED light.

Curriculum Focus

Students will design their maze on paper first and then use OzoBlockly to program Ozobot to follow the path and solve the maze.

- What worked well and did not work well?
- What did you discover about the different speed options?
- What do we know about the distance of the steps?
- Did you change anything?
- Does Evo behave better at a certain speed?
- When would you want to use slow, medium and fast?



Third Grade - Sixth Grade

2. Lego WeDo Life Hacks

There's inspiration for life hacks all around us. Students will brainstorm simple problems they face in their daily lives. Ask them to think about things like:

- What could they make or hack together to make their lives easier?
- Do they need help waking up in the morning?
- Do they need a helper for household chores?
- Do they need a reminder to do something?

Students will

BRAINSTORM

Students work in pairs, spending a few minutes to generate as many ideas as they can to solve the problem. They can use the bricks from the LEGO® set during the brainstorming process, or sketch out their ideas in the space provided on the worksheet.

CREATE PROTYPES

Students will spend time tinkering with the LEGO® bricks in order to generate ideas. The goal of tinkering is to explore as many solutions as possible.

PRESENT IDEAS

Students will take turns sharing their ideas within their groups. Once all of the ideas have been shared, each group should select the best idea(s) to make. Be prepared to help facilitate this process, ensuring that the students choose an idea that is possible to make.

CHOOSE THE BEST IDEA

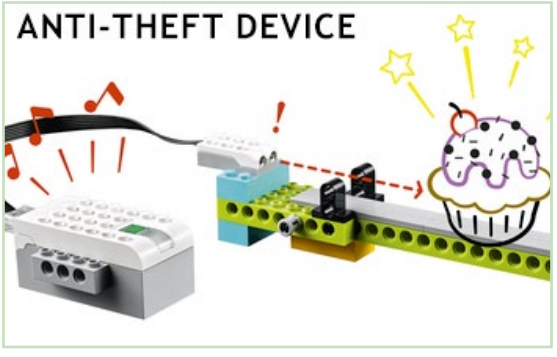
Students should record up to three design criteria on their worksheets. They will refer to this again as they review and revise their solutions.

Curriculum Focus

During the making process, students will test and analyze their ideas as they go, making improvements where necessary. Students will be able to:

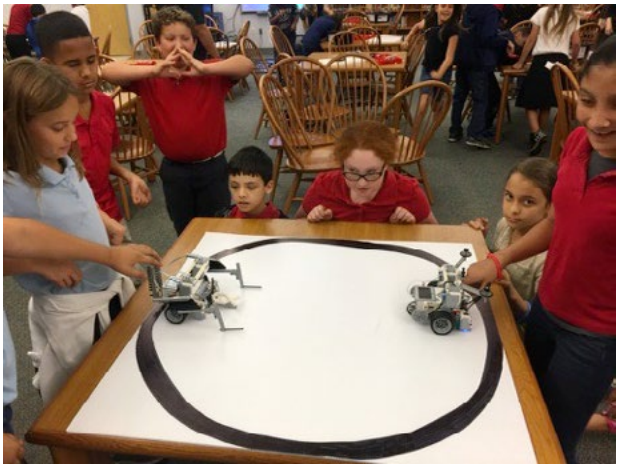
- Defined a clear design need
- Developed their ability to iterate and improve design solutions
- Developed their problem-solving and communication skills
- Used and understood the design process

LEGO® WeDo 2.0 is a robotics hardware and software platform specifically designed for Kindergarten to Grade 2 students. LEGO® bricks are naturally engaging to kids. By the end of the session students will be able to build and program LEGO® models featuring working motors, motion and tilt sensors. As with other LEGO Education products it follows the 4 C's process – Connect to a story, Construct a model, Contemplate its function, and Continue improving its design.



Third Grade - Sixth Grade

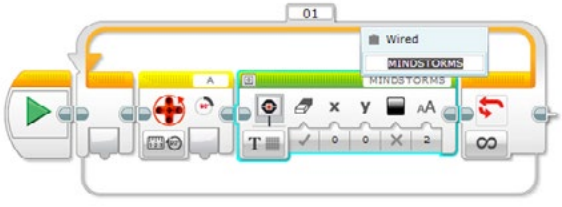
3. Lego Mindstorms SugoBots



SuGO is a mashup of Sumo wrestling and LEGO robotics. Players construct robots using LEGO MINDSTORMS components, which then compete in matches against each other teams. In a match, robots work to win points by pushing an opponent's robot off a round SuGO playing ring. It is also possible to win points by reason of an opponent being penalized. The overall contest is structured as a double elimination tournament format, where each robot must lose two matches to be eliminated from the tournament.

Lego Mindstorms

LEGO MINDSTORMS EV3 makes building, programming and commanding your own LEGO robots smarter, faster, and more fun than ever. The Engineering aspect, allows students to get very creative. Students can create their own devices. They can follow their own paths. This flexibility means that every child can take ownership over their own learning. It also means that they can stretch their imaginations. The creativity works nicely along side 'self efficacy' and 'engineering' to create a meaningful learning experience that can well and truly rival any over programming platform out there.



Students will

- Be able to define a clear design need.
- Develop their ability to iterate and improve design solutions.
- Expand their problem-solving and communication skills.
- Use and understand the design process.

Curriculum Focus

The learning outcomes with the SugoBot Mindstorm project include:

- Developing and using models
- Analyzing and interpreting data
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information
- Cross-cutting concepts
- Cause and effect: Mechanism and explanation
- Motion and stability: Forces and interactions
- Asking questions

Third Grade - Sixth Grade

4. Rocket Science Space Odyssey

Students will design, build, and fly their very own model rocket. This introduction to the exciting world of rocketry explains the world of rockets and aero-science through simple lessons in Newtonian physics and rocket flight. Students learn the laws of rocket stability, fluid dynamics, and aerodynamics. They study stable rocket flight designs and ultimately design their own flight vehicle. Best of all, they actually build and launch their own rocket — we will capture rocket launches on video. Since each student will design and build their very own rocket, they will be able to take their rocket home with them at the end of the day. This project may be their first step to the stars!

Curriculum Focus: To apply rocket principles and design, construct, test, and launch a compressed air rocket using a real-world problem-solving simulation.

Students will

- Describe and demonstrate proper safety procedures when launching a rocket.
- Identify each part of a rocket and describe its function.
- Describe how fins provide aerodynamic stability to the flying rocket.
- Describe rocket recovery systems and determine which type is best for the rocket being constructed.
- Describe newton's three laws of motion and how they relate to model rocketry.

NASA

NASA

CONCEPTS TO BE DEVELOPED

- how a rocket is constructed.
- how the parts of a rocket function.
- how a rocket works.
- how science and rocketry are connected, specifically Newton's three Laws of Motion.

Third Grade - Sixth Grade

5. Coding with Google & Scratch 2.0

Student swill learn the fundamentals of object-oriented programming with Scratch 2.0. Students will be able to let their imaginations run wild in this multimedia adventure. First they will create their own Google Doodle using drag-and-drop programming basics. Students will have a blast and use their programming skills and creativity as they learn how to program their own stories, games, and animations, as well as how to share their creations on the web. They will also take home a copy of their programming successes at the end of the session. This could be the start of something BIG!

Students will

- Define “coding” and “computer science”.
- Make connections between computer science concepts and the real world.
- Learn new vocabulary:
  - > Code - (v) to write code, or to write instructions for a computer.
  - > Algorithm - a detailed step-by-step instruction set or formula for solving a problem or completing a task.
  - > Debugging - Finding and fixing problems in your algorithm or program.
  - > Program - An algorithm that has been coded into something that can be run by a machine.

Curriculum Focus

Students will use the Google starter logo as a blueprint for creation. Some expected outcomes include:

- Overcoming obstacles such as time constraints or bugs.
- Identify actions that correlate to input events.
- Create an animated, interactive logo using sequence and events.

In addition to learning how to code, students will establish group norms to create a positive online community that promotes responsible and respectful digital behavior.

Google Doodle

Google Doodles (google.com/doodles) are special logos that appear on the Google homepage. They celebrate holidays, anniversaries, and the lives of famous artists, pioneers and scientists. At Google, there’s an entire team of artists and computer scientists that creates Doodles.

Third Grade - Sixth Grade

6. Video Game Designers

Think you've got what it takes to create the next Flappy Bird or Space Invaders? tudents will become game designers and experience creating their own game project. Guided by the activities in this unit, students will be introduced to game mechanics and game development while building understandings of computational concepts (conditionals, operators, data) and computational practices (abstracting and modularizing).

Scratch is a programming language and an online community where children can program and share interactive media such as stories, games, and animation with people from all over the world. As children create with Scratch, they learn to think creatively, work collaboratively, and reason systematically. Scratch helps young people learn to think creatively, reason systematically, and work collaboratively — essential skills for life in the 21st century.

Students will

- Use Scratch block programming to solve problems, animate sprites and create scripts.
- Learn about basic programming logic, including loops, if-then statements, variables, and user-computer interaction.
- Define "coding" and "computer science"
- Make connections between computer science concepts and the real world.
- Be introduced to the computational concepts of conditionals, operators, and data (variables and lists).
- Identify and understand common game mechanics.
- Learn new vocabulary:
  - > Algorithm - a detailed step-by-step instruction set or formula for solving a problem or completing a task.
  - > Debugging - Finding and fixing problems in your algorithm or program.
  - > Program - An algorithm that has been coded into something that can be run by a machine.

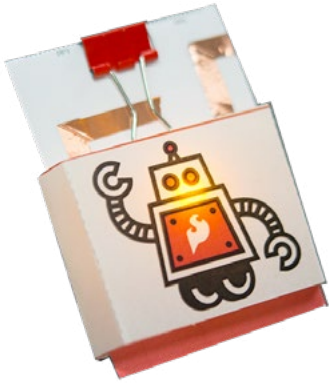
Curriculum Focus

Students will become more familiar with the computational practices of experimenting and iterating, testing and debugging, reusing and remixing, and abstracting and modularizing by building and extending a self-directed video game.

Third Grade - Sixth Grade

7. Tomorrow's Engineers

Students will learn how electrical circuits work to run everyday devices that they're familiar with. They'll gain valuable lessons in building and in following instructions and we'll use our working circuits to demonstrate how electricity works to run a remote control rover.



Creating paper circuits can teach not only the basics of electronic circuitry, but also about design, iteration, troubleshooting, collaboration, creative expression, and more.

Students will learn

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- That a circuit can also contain other electrical components, such as bulbs, buzzers or motors, which allow electricity to pass through.
- Electricity will only travel around a circuit that is complete. That means it has no gaps.

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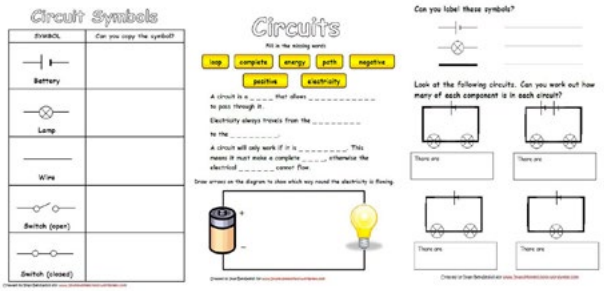
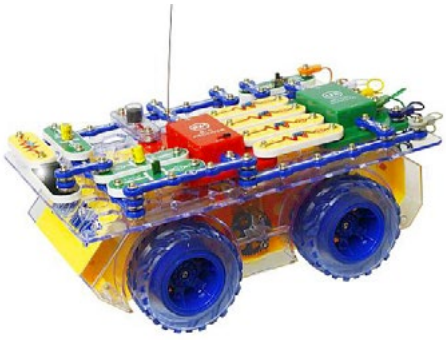
1. Students will work in teams of 3 - 4 to build several simple circuits and explore electricity using "Snap Circuits, Jr." kits. Each pair of students should be able to make each type of circuit. When students have completed each type of circuit, they will have time to apply what they learned to create their own.
2. Students will also learn how to be safe around electricity.



Snap Circuits

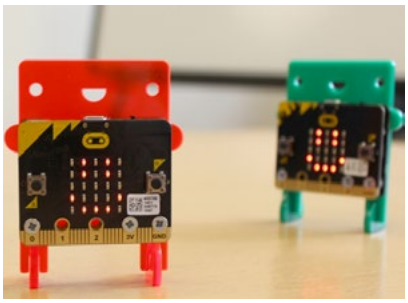
Snap Circuits® uses building pieces with snaps to assemble different electronic circuits on a simple "rows-and-columns" base grid that functions like the printed circuit board found in most electronic products. Each component is easily identifiable by a different color and functional purpose.

Snap Circuits® makes learning electronics easy and fun! Just follow the colorful pictures in our manual and build exciting projects such as a flying saucer, alarms, doorbells and much more!



Third Grade - Sixth Grade

8. Tinker, Code, Design with Micro:Bit



The BBC micro:bit will introduce students to the joy of computing. Making their own personal device do whatever they code it to do is empowering. Programming the BBC micro:bit will tap into the student's imagination and creativity. The device and programming environment provide a playful way to explore a multitude of computational behaviors. Students will learn how to program the micro:bit and how it works. Each team will collaborate on 2 projects:

1. Design and Build a Micro:Pet
2. Create a device to prevent theft.

Students will

- Exercise creativity and resourcefulness by coming up with ideas for using simple household materials to accommodate the micro:bit's size and weight in many different ways.
- Test and iterate using different materials and sizes in order to create an optimal design to house the micro:bit and battery pack.
- Learn how to download programs and move them to the micro:bit file to run on the micro:bit.
- Use the design thinking process to develop an understanding for a problem or user need.

Curriculum Focus

Students will be introduced to a process of design that starts with talking to one another. Whatever you build with code should serve a purpose or fill a need. Sometimes what you build will make the world more beautiful, or help somebody else. Our design process, based on a process called design thinking, can give students a specific framework for thinking purposefully about design.

Over the course of 4 weeks, students will complete 2 projects:

1. Micro:Pet: Students will create a 3D pet. The design should use whatever materials are available to support the micro:bit so that its face is showing. The Micro:Pet needs to:

- Support the micro:bit and its battery pack
- have easy access the micro:bit to turn it on and off

2. Hands Off My Donut: This activity challenges students to design and prototype a simple motion-sensing alarm. The device is intended to prevent theft of a personal object.

Micro:Bit

The micro:bit is a hand held, fully programmable computer being given free to every Year 7 or equivalent child across the UK. It's 70 times smaller and 18 times faster than the original BBC Micro computers used in schools in the early 1980s. This little device has an awful lot of features, like 25 red LED lights that can flash messages. There are two programmable buttons that can be used to control games or pause and skip songs on a playlist. Micro:bit can detect motion and tell you which direction you're heading in, and it can use a low energy Bluetooth connection to interact with other devices and the Internet – clever!