

Innovation Lab Grade 5

Unit Title: Unit 1: Digging into STEAM

Stage 1: Desired Results

Standards & Indicators:

NJSLS Mathematics

- **MP 1.** Make sense of problems and persevere in solving them.
- **MP 2.** Reason abstractly and quantitatively.

NJSLS Science

- **3-5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Computer Science and Design Thinking

Standard	Performance Expectations	Core Ideas
8.1.5.NI.2	Describe physical and digital security measures for protecting sensitive personal information.	Distinguishing between public and private information is important for safe and secure online interactions. Information can be protected using various security measures (i.e., physical and digital)
8.1.5.IC.1	Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.	The development and modification of computing technology is driven by individual's needs and wants and can affect individuals differently.
8.1.5.IC.2	Identify possible ways to improve the accessibility and usability of computing technologies to address the diverse needs and wants of users.	
8.1.5.CS.1	Model how computing devices connect to other components to form a system.	Computing devices may be connected to other devices to form a system as a way to extend their capabilities.
8.1.5.CS.2	Model how computer software and hardware work together as a system to accomplish tasks.	Software and hardware work together as a system to accomplish tasks (e.g., sending, receiving, processing, and storing units of information)
8.1.5.CS.3	Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.	Shared features allow for common troubleshooting strategies that can be effective for many systems.
8.1.5.AP.1	Compare and refine multiple algorithms for the same task and determine which is the most appropriate.	Different algorithms can achieve the same result. Some algorithms are more appropriate for a specific use than others.

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8.1.5.AP.2	Create programs that use clearly named variables to store and modify data.	Programming languages provide variables, which are used to store and modify data.
8.1.5.AP.3	Create programs that include sequences, events, loops, and conditionals.	A variety of control structures are used to change the flow of program execution (e.g., sequences, events, loops, conditionals).
8.1.5.AP.4	Break down problems into smaller, manageable sub-problems to facilitate program development.	Programs can be broken down into smaller parts to facilitate their design, implementation, and review. Programs can also be created by incorporating smaller portions of programs that already exist.
8.1.5.AP.5	Modify, remix, or incorporate pieces of existing programs into one's own work to add additional features or create a new program.	
8.1.5.AP.6	Develop programs using an iterative process, implement the program design, and test the program to ensure it works as intended.	Individuals develop programs using an iterative process involving design, implementation, testing, and review.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.	An individual's passions, aptitude and skills can affect his/her employment and earning potential.
9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.	
9.4.5.CI.4	Research the development process of a product and identify the role of failure as a part of the creative process.	Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills.
9.4.5.CT.3	Describe how digital tools and technology may be used to solve problems.	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3).	
9.4.5.DC.1	Explain the need for and use of copyrights.	Intellectual property rights exist to protect the original works of individuals. It is allowable to use other people's ideas in one's own work provided that proper credit is given to the original source.
9.4.5.DC.2	Provide attribution according to intellectual property rights guidelines using public domain or creative commons media.	

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9.4.5.DC.3	Distinguish between digital images that can be reused freely and those that have copyright restrictions.	
9.4.5.DC.4	Model safe, legal, and ethical behavior when using online or offline technology.	Sending and receiving copies of media on the internet creates the opportunity for unauthorized use of data, such as personally owned video, photos, and music.
9.4.5.DC.5	Identify the characteristics of a positive and negative online identity and the lasting implications of online activity.	Digital identities must be managed in order to create a positive digital footprint.
9.4.5.DC.6	Compare and contrast how digital tools have changed social interactions.	Digital tools have positively and negatively changed the way people interact socially.
9.4.5.DC.7	Explain how posting and commenting in social spaces can have positive or negative consequences.	
9.4.5.DC.8	Propose ways local and global communities can engage digitally to participate in and promote climate action.	Digital engagement can improve the planning and delivery of climate change actions.
9.4.5.IML.1	Evaluate digital sources for accuracy, perspective, credibility and relevance (e.g., Social Studies Practice - Gathering and Evaluating Sources).	Digital tools and media resources provide access to vast stores of information, but the information can be biased or inaccurate.
9.4.5.IML.4	Determine the impact of implicit and explicit media messages on individuals, groups, and society as a whole.	Accurate and comprehensive information comes in a variety of platforms and formats and is the basis for effective decision-making.
9.4.5.IML.5	Distinguish how media are used by individuals, groups, and organizations for varying purposes.	
9.4.5.IML.6	Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.	
9.4.5.IML.7	Evaluate the degree to which information meets a need including social emotional learning, academic, and social.	
9.4.5.TL.3	Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols.	Different digital tools have different purposes.
9.4.5.TL.5	Collaborate digitally to produce an artifact	Collaborating digitally as a team can often develop a better artifact than an individual working alone.
Central Idea/Enduring Understanding: <ul style="list-style-type: none"> STEAM is a combination of science, technology, engineering, arts, and mathematics used to solve real world problems with hands-on collaborative 		Essential/Guiding Question: <ul style="list-style-type: none"> What is STEAM and why is it important? What does it mean to be a responsible digital citizen?

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<p>learning. A digital citizen is someone who uses the internet and other digital technology to responsibly participate within their community.</p> <ul style="list-style-type: none"> • A digital footprint is the record of all your interactions online. Once something is posted or shared online, it can be there forever. Understanding your digital footprint helps you choose and control what you leave online for others to see and find. • Coding is a basic literacy language used to communicate in the digital world. It is the set of digital commands needed for technology to work. 	<ul style="list-style-type: none"> • What is a digital footprint and why does it matter? • What is coding and how does it impact my life?
<p><u>Content:</u> Week 1- Intro to STEAM (classroom procedures and creating a class rubric for self and teacher assessment) Week 2 - What does a STEAM class look like, how does it function, and what does the T mean in STEAM? Week 3 & 4 - Digital citizenship/digital footprint and chromebook introduction/shortcuts/and care (commonsensemedia.org lessons) Week 5 - Code intro (what is coding, why is it important, how can I use it) and program tied to coding robot Week 6 - Practice coding using coding software and given tasks Week 7 - Coding task trials and videoing of coding attempts with robot Week 8 - Coding presentation with robot/sharing of video/discussion/reflection/assessment</p>	<p><u>Skills (Objectives):</u></p> <ul style="list-style-type: none"> • Define STEAM and how it can be useful in my life. • Explain & demonstrate ways to be a responsible digital citizen. • Define technology and research the history of technology. • Define coding and how it is used in the real world. • Use code to program a robot to complete assigned tasks.
<p><u>Interdisciplinary Connections:</u> Interdisciplinary curriculum coordination will be done with other departments on a regular basis. The nature of the Innovation Lab (STEAM driven) discipline incorporates:</p> <ul style="list-style-type: none"> • Real world, hands-on, collaborative learning experiences involving science, technology, engineering, arts, and mathematics (STEAM) • Basic principles of algebra, geometry, chemistry, electricity, and physics through real world learning experiences designed to develop critical thinking, collaborative and problem solving skills. • Opportunity to discover, create, and own solutions to real-world problems while using the latest technologies. • Leadership and problem solving skills through collaborations and presentations. <p><u>NJSLS ELA Standards</u></p>	

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- **RI.CR.5.1.** Quote accurately from **an informational** text when explaining what the text says explicitly and make relevant connections when drawing inferences from the text.
- **L.VL.5.2.** Determine or clarify the meaning of unknown and multiple-meaning academic and domain-specific words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.
- **RI.MF.5.6.** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, timelines, animations, or interactive elements on web pages) and explain how the information contributes to an understanding of the text in which it appears.
- **W.IW.5.2** Use precise language and domain-specific vocabulary to inform about or explain the topic.
- **W.WP.5.4.D** With adult and peer feedback, and digital or print tools such as a dictionary, thesaurus, and/or spell checker, evaluate whether the writing achieved its goal and make changes in content or form as necessary.
- **SL.PE.4.1.B** Follow agreed-upon rules for discussions and carry out assigned roles.
- **SL.PE.4.1.C** Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others
- **SL.PE.4.1.D** Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
- **L.WF.5.2.H** Spell grade-appropriate words correctly, consulting references as needed.
- **L.KL.5.1.** Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- **L.VL.5.2.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.
- **L.VL.5.2.A.** Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase.
- **L.VL.5.2.C.** Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.
- **L.KL.5.1.A** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases.

Stage 2: Assessment Evidence

Performance Task(s):

- Presentation of a coded robot.
- Completing a given task for coding.

Other Evidence:

- Weekly STEAM reflection log (exit ticket)
- Rubric
- Classroom discussions/participation

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Week 1 - Intro to STEAM (procedures and creating a class rubric). Establish classroom procedures and expectations.
- Week 2 - What does STEAM look like and what does the T mean in STEAM? Defining the history and present term of the word technology. Give examples of technology (pros and cons) and how we use it.

Resources:

- Commonsensemedia.org
 - procedure slide show
 - Chromebooks
 - STEAM logs/rubric (exit ticket)
- KWL chart about the term technology
- articles/books/videos about technology
 - Chromebooks
 - STEAM logs/rubric (exit ticket)

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<ul style="list-style-type: none"> ○ Allow time for independent exploration 			
<p>Differentiation *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation.</p>			
High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
STEAM Reflection Log Extension Tasks Adaptation of materials and requirements Elevated text or question complexity Independent student options Projects completed individually or with partners Self-selection of research Open-ended activities Expert mentorship	STEAM Reflection Log Varying instructional strategies In-class interventions Compacting activity Extend or abbreviate duration of assignments	STEAM Reflection Log <u>Materials</u> Provide text in alternative formats, such as Braille, large print, audio formats, or digital text Use peer readers Permit highlighting of text List discussion questions prior to reading text Vocabulary lists and/or study guides Provide lecture notes/outline <u>Environment</u> Reduce visual or auditory distractions Preferential seating Post a visual schedule Emphasize multi-sensory learning <u>Directions</u> Use oral, recorded, and/or printed directions	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

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		<p>Highlight key words in directions</p> <p>Give brief and concrete directions</p> <p>Have student verbalize steps</p> <p>Repeat, clarify, or reword directions</p> <p>Scaffolded Instruction</p> <p>Time Alert students before transitions</p> <p>Provide additional time for tasks</p> <p>Extra response time</p>	
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Unit Title: Unit 2: Making Connections

Stage 1: Desired Results

Standards & Indicators:

NJSLS Science

- **ETS1.A:** Defining and Delimiting Engineering Problems Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.
- **ETS1.B:** Developing Possible Solutions
 - Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)
 - At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2)
 - Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3-5-ETS1-3)
- **ETS1.C:** Optimizing the Design Solution Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-5-ETS1-3)
- **3-5-ETS1-2.** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

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- **3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- **5-ESS3-1** Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources, environment, and address climate change issues.

Computer Science and Design Thinking

Standard	Performance Expectations	Core Ideas
8.2.5.ED.1	Explain the functions of a system and its subsystems.	Engineering design is a systematic and creative process of communicating and collaborating to meet a design challenge. Often, several design solutions exist, each better in some way than the others.
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.	
8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.	
8.2.5.ED.4	Explain factors that influence the development and function of products and systems (e.g., resources, criteria, desired features, constraints).	Engineering design requirements include desired features and limitations that need to be considered.
8.2.5.ED.5	Describe how specifications and limitations impact the engineering design process.	
8.2.5.ED.6	Evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process.	
8.2.5.ITH.2	Evaluate how well a new tool has met its intended purpose and identify any shortcomings it might have.	
8.2.5.ITH.3	Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use.	A new tool may have favorable or unfavorable results as well as both positive and negative effects on society. Technology spurs new businesses and careers.
8.2.5.ITH.4	Describe a technology/tool that has made the way people live easier or has led to a new business or career.	

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.5.CI.3	Participate in a brainstorming session with individuals with diverse perspectives to expand one’s thinking about a topic of curiosity	Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills.

Central Idea/Enduring Understanding:

- STEAM is a combination of science, technology, engineering, art and mathematics used to solve real world problems with hands-on collaborative learning.

Essential/Guiding Question:

- What is STEAM and why is it important?
- What is electricity?
- What makes a circuit work?
- What is a switch?

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<ul style="list-style-type: none"> ● In a series circuit, there is only one pathway for the current, but in a parallel circuit there are two or more pathways for it. ● A switch is a device for making and breaking the connection in an electric circuit. ● Alternative energy is energy generated in ways that do not deplete natural resources or harm the environment, especially by avoiding the use of fossil fuels and nuclear power. 	<ul style="list-style-type: none"> ● What is the difference between an open and closed electric circuit? ● What is the difference between a series and parallel circuit? ● What is alternative energy and how is it used?
<p>Content:</p> <p>Week 1 - Introduction to electricity Week 2 - Types of circuits Week 3 - Alternative energy Week 4 - Modeling video recording Week 5 - Build a circuit Week 6 - Create your own circuit. Week 7 - Create your own circuit. Week 8 - Presentation</p>	<p>Skills (Objectives):</p> <ul style="list-style-type: none"> ● Students will be able to describe how a series and parallel circuit work. ● Students will be able to follow directions to create different kinds of circuits. ● Students will be able to define and identify alternative energy sources. ● Students will be able to design their own circuit.
<p><u>Interdisciplinary Connections:</u></p> <p><u>NJSLS Anchor Standards & Indicators for Reading</u></p> <ul style="list-style-type: none"> ● NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. ● NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. ● NJSLSA.R10. Read and comprehend complex literary and informational texts independently and proficiently with scaffolding as needed. ● RI.5.1. Quote accurately from a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text. ● RI.5.4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area. <p><u>NJSLS Anchor Standards & Indicators for Writing</u></p> <ul style="list-style-type: none"> ● NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. ● NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. ● NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others. ● NJSLSA.W8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. ● NJSLSA.W10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences. ● W.5.2.D. Use precise language and domain-specific vocabulary to inform about or explain the topic. ● W.5.6. With some guidance and support from adults and peers, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting. 	

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NJSLS Anchor Standards for Speaking and Listening

- **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
- **NJSLSA.SL2.** Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
- **NJSLSA.SL5.** Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
- **SL.5.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
 - **SL.5.1.B.** Follow agreed-upon rules for discussions and carry out assigned roles.
 - **SL.5.1.C** Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others
 - **SL.5.1.D** Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.

NJSLS Anchor Standards & Indicators for Language

- **NJSLSA.L1.** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- **NJSLSA.L2.** Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- **NJSLSA.L4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
- **NJSLSA.L6.** Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.
- **L.5.2.** Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
 - **E.** Spell grade-appropriate words correctly, consulting references as needed.
- **L.5.4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.
 - **A.** Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase.
 - **C.** Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.
- **L.5.6.** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., however, although, nevertheless, similarly, moreover, in addition).

Stage 2: Assessment Evidence

Performance Task(s):

- Presentation of completed alternative energy projects
- Completed assessment on parts of the snap circuit kit

Other Evidence:

- Weekly STEAM reflection log (exit ticket)
- Rubric
- Classroom discussions/participation
- Class activities showing knowledge of alternative energy and electricity.

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Stage 3: Learning Plan

Learning Opportunities/Strategies:

Week 1 - Introduction to electricity and snap circuits (switches, circuits). Material exploration.

Week 2 - Series vs. parallel circuits. Insulators and conductors. Project TBD

Week 3 - Explore types of alternative energy and how they impact our world. Complete solar energy snap circuit project TBD.

Week 4 - Intro procedure and modeling videoing for circuit project build. Practice using chromebook to record, project #TBD

Week 5 - Complete project TBD and practice recording giving objective and explanation.

Week 6 - Create your own circuit. Identify type of circuit. Record the path the electricity flows through using Chromebook camera.

Week 7 - Create your own circuit. Identify type of circuit. Record the path the electricity flows through using Chromebook camera.

Resources:

- Snap Circuits Green Alternative Energy Kit
- Mentor Text
- Snap Circuit Slideshow
- <https://www.brainpop.com/science/energy/electricity/> (What is electricity?)
- KWL Chart on energy
- Chromebooks
- STEAM log/exit ticket

- <https://www.youtube.com/watch?v=HOFp8bHTN30> (What is a circuit?)
- Snap Circuits Green Alternative Energy Kit
- Chromebooks
- STEAM log/exit ticket

- Instructional videos on electricity/alternative energy (Renewable Energy 101 | National Geographic - <https://www.youtube.com/watch?v=1kUE0BZtTRc>)
- Snap Circuit Green Alternative Energy Kit
- Chromebooks
- STEAM log/exit ticket

- <https://prezi.com/0gdnoq6vun9s/snap-circuits-presentation/>
- <https://www.youtube.com/watch?v=jYeV90caWCI> (How to make a video on chromebook and upload to google classroom)
- Snap Circuit Green Alternative Energy Kit
- Chromebooks
- STEAM log/exit ticket

- Snap Circuit Green Alternative Energy Kit
- Chromebooks
- STEAM log/exit ticket

- Snap Circuit Green Alternative Energy Kit
- Chromebooks
- STEAM log/exit ticket
- Mentor Text

- Snap Circuit Green Alternative Energy Kit
- Chromebooks
- STEAM log/exit ticket

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<p>Week 8 - Presentation of video/discussion/reflection/assessment</p>	<ul style="list-style-type: none"> ● Snap Circuit Green Alternative Energy Kit ● Chromebooks ● STEAM log/exit ticket 		
<p><u>Differentiation</u> *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation</p>			
<p style="text-align: center;">High-Achieving Students</p>	<p style="text-align: center;">On Grade Level Students</p>	<p style="text-align: center;">Struggling Students</p>	<p style="text-align: center;">Special Needs/ELL</p>
<p>STEAM Reflection Log</p> <p>Extension Tasks</p> <p>Adaptation of materials and requirements</p> <p>Elevated text or question complexity</p> <p>Independent student options</p> <p>Projects completed individually or with partners</p> <p>Self-selection of research</p> <p>Open-ended activities</p> <p>Expert mentorship</p>	<p>STEAM Reflection Log</p> <p>Varying instructional strategies</p> <p>In-class interventions</p> <p>Compacting activity</p> <p>Extend or abbreviate duration of assignments</p>	<p>STEAM Reflection Log</p> <p><u>Materials</u></p> <p>Provide text in alternative formats, such as Braille, large print, audio formats, or digital text</p> <p>Use peer readers</p> <p>Permit highlighting of text</p> <p>List discussion questions prior to reading text</p> <p>Vocabulary lists and/or study guides</p> <p>Provide lecture notes/outline</p> <p><u>Environment</u></p> <p>Reduce visual or auditory distractions</p> <p>Preferential seating</p> <p>Post a visual schedule</p>	<p>Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing</p> <p>ELL supports should include, but are not limited to, the following::</p> <p>Extended time</p> <p>Provide visual aids</p> <p>Repeated directions</p> <p>Differentiate based on proficiency</p> <p>Provide word banks</p> <p>Allow for translators, dictionaries</p>

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		<p>Emphasize multi-sensory learning</p> <p><u>Directions</u> Use oral, recorded, and/or printed directions</p> <p>Highlight key words in directions</p> <p>Give brief and concrete directions</p> <p>Have student verbalize steps</p> <p>Repeat, clarify, or reword directions</p> <p>Scaffolded Instruction</p> <p><u>Time</u> Alert students before transitions</p> <p>Provide additional time for tasks</p> <p>Extra response time</p>
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Unit Title: Unit 3: Learning with Legos & Stop Motion Animation

Stage 1: Desired Results

Standards & Indicators:

ART Anchor Standard 1: Generating and conceptualizing ideas

- 1.2.5.Cr1f: Brainstorm goals and plans for a media art audience.

ART Anchor Standard 2: Organizing and developing ideas

- 1.2.5.Cr2b: Model ideas, plan in an effective direction.

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- **1.2.5.Cr2c:** Brainstorm goals and plans for a media art audience.

ART Anchor Standard 3: Refining and completing products

- **1.2.5.Cr3c:** Explore how elements and components can be altered for clear communication and intentional effects, point of view, perspective, and refine media artworks to improve clarity and purpose.

Computer Science and Design Thinking

Standard	Performance Expectations	Core Ideas
8.1.5.NI.1	Develop models that successfully transmit and receive information using both wired and wireless methods.	Information needs a physical or wireless path to travel to be sent and received.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.	Data can be organized, displayed, and presented to highlight relationships.
8.1.5.DA.3	Organize and present collected data visually to communicate insights gained from different views of the data.	Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.
8.1.5.DA.5	Propose cause and effect relationships, predict outcomes, or communicate ideas using data.	Many factors influence the accuracy of inferences and predictions.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.	An individual's passions, aptitude and skills can affect his/her employment and earning potential.
9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.	
9.4.5.CI.4	Research the development process of a product and identify the role of failure as a part of the creative process.	Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills.
9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3).	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.

Central Idea/Enduring Understanding:

- STEAM is a combination of science, technology, engineering, art and mathematics used to solve real world problems with hands-on collaborative learning.
- Investigate the effects of balanced and unbalanced forces using Legos.
- Understand the Engineering Design Process

Essential/Guiding Question:

- What is STEAM and why is it important?
- Which creation can do the best running, jumping or throwing?
- What is the engineering design process?
- What is stop motion animation and how is it used?

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<ul style="list-style-type: none"> ● Understand the process of stop motion animation 	
<p><u>Content:</u> Week 1 - Lego Learning and Exploration/Weightlifter Week 2- Gravity Car Derby or Cheering Crowd Week 3- Intro to TinkerCad Week 4- TinkerCad Creation Week 5 - Finish creation/Brainstorm and supply list Week 6- Stop Motion Introduction/ start recording Week 7 - Continue Stop Motion Recording Week 8 - Presentation/reflection/assessment</p>	<p><u>Skills (Objectives):</u></p> <ul style="list-style-type: none"> ● Explore how pushing and pulling affects a mechanism’s motion and speed. ● Make predictions about how the forces acting on an object can change its motion. ● Study and apply the process of stop-animation.
<p><u>Interdisciplinary Connections:</u> <u>NJSLS Listening and Speaking</u></p> <ul style="list-style-type: none"> ● NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others’ ideas and expressing their own clearly and persuasively. ● NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally. ● NJSLSA.SL3. Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric. ● NJSLSA.SL4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience. ● NJSLSA.SL6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate. <p><u>NJSLS Anchor Standards & Indicators for Language</u></p> <ul style="list-style-type: none"> ● NJSLSA.L1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. ● NJSLSA.L2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. ● NJSLSA.L3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening. ● NJSLSA.L4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate. ● NJSLSA.L6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression. ● L.5.2.E. Spell grade-appropriate words correctly, consulting references as needed. ● L.5.3. Use knowledge of language and its conventions when writing, speaking, reading, or listening. ● L.5.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies. <ul style="list-style-type: none"> ○ A. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase. ○ C. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases. ● L.5.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., however, although, 	

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nevertheless, similarly, moreover, in addition).

NJSLS Anchor Standards & Indicators for Writing

- NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others
- NJSLSA.W8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
- NJSLSA.W9. Draw evidence from literary or informational texts to support analysis, reflection, and research.
- NJSLSA.W10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.
- W.5.2.D. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- W.5.6. With some guidance and support from adults and peers, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.

Stage 2: Assessment Evidence

Performance Task(s):

- Completion of Lego Task Challenges
- Completion and recording of stop motion animation project

Other Evidence:

- Weekly STEAM reflection log (exit ticket)
- Rubric
- Classroom discussions/participation
- Class activities showing knowledge of alternative energy and electricity.

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Week 1 - Lego Learning and Exploration/weightlifter

- Week 2 - Gravity Car Derby or Cheering Crowd

- Week 3- Intro to TinkerCad

Resources:

- Video at www.Legoeducation.com
- Lego Education BricQ Motion Essential Set
- Building instructions book
- Chromebooks
- STEAM logs/rubric (exit ticket)
- Student worksheet

- Video at www.Legoeducation.com
- Lego Education BricQ Motion Essential Set
- Building instructions book
- Chromebooks
- STEAM logs/rubric (exit ticket)
- Student worksheet

- <https://www.tinkercad.com/>
- Chromebooks/iPads
- https://www.youtube.com/watch?v=4QXV2WM_aQw
- 3D printer

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<ul style="list-style-type: none"> ● Week 8- Presentation/reflection/assessment 	<ul style="list-style-type: none"> ● Props for stop motion ● Green tri fold boards ● Art supplies for backdrop ● Video presentations ● Lego Kits ● Chromebook ● Steam Log (exit ticket) 		
<p>Differentiation *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation</p>			
High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
<p>STEAM Reflection Log</p> <p>Extension Tasks</p> <p>Adaptation of materials and requirements</p> <p>Elevated text or question complexity</p> <p>Independent student options</p> <p>Projects completed individually or with partners</p> <p>Self-selection of research</p> <p>Open-ended activities</p> <p>Expert mentorship</p>	<p>STEAM Reflection Log</p> <p>Varying instructional strategies</p> <p>In-class interventions</p> <p>Compacting activity</p> <p>Extend or abbreviate duration of assignments</p>	<p>STEAM Reflection Log</p> <p>Materials</p> <p>Provide text in alternative formats, such as Braille, large print, audio formats, or digital text</p> <p>Use peer readers</p> <p>Permit highlighting of text</p> <p>List discussion questions prior to reading text</p> <p>Vocabulary lists and/or study guides</p> <p>Provide lecture notes/outline</p> <p>Environment</p> <p>Reduce visual or auditory distractions</p> <p>Preferential seating</p>	<p>Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing</p> <p>ELL supports should include, but are not limited to, the following::</p> <p>Extended time</p> <p>Provide visual aids</p> <p>Repeated directions</p> <p>Differentiate based on proficiency</p> <p>Provide word banks</p> <p>Allow for translators, dictionaries</p>

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		<p>Post a visual schedule</p> <p>Emphasize multi-sensory learning</p> <p><u>Directions</u> Use oral, recorded, and/or printed directions</p> <p>Highlight key words in directions</p> <p>Give brief and concrete directions</p> <p>Have student verbalize steps</p> <p>Repeat, clarify, or reword directions</p> <p>Scaffolded Instruction</p> <p><u>Time</u> Alert students before transitions</p> <p>Provide additional time for tasks</p> <p>Extra response time</p>	
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Unit Title: Unit 4: Structures & Simple Machines

Stage 1: Desired Results

Standards & Indicators:

NJSLS Mathematics

- **MP 1.** Make sense of problems and persevere in solving them.

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- **MP 2.** Reason abstractly and quantitatively.

NJSLS Science

- **3-5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- **3-5-ETS1-1** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- **3-5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- **3-5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Computer Science and Design Thinking

Standard	Performance Expectations	Core Ideas
8.2.5.ED.1	Explain the functions of a system and its subsystems.	Engineering design is a systematic and creative process of communicating and collaborating to meet a design challenge. Often, several design solutions exist, each better in some way than the others.
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.	
8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.	
8.2.5.ED.5	Describe how specifications and limitations impact the engineering design process.	Engineering design requirements include desired features and limitations that need to be considered.
8.2.5.ED.6	Evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process.	
8.2.5.ITH.1	Explain how societal needs and wants influence the development and function of a product and a system.	Societal needs and wants determine which new tools are developed to address real-world problems.
8.2.5.NT.1	Troubleshoot a product that has stopped working and brainstorm ideas to correct the problem.	Technology innovation and improvement may be influenced by a variety of factors. Engineers create and modify technologies to meet people’s needs and wants; scientists ask questions about the natural world.
8.2.5.NT.2	Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries, and societies.	
8.2.5.NT.3	Redesign an existing product for a different purpose in a collaborative team.	
8.2.5.NT.4	Identify how improvement in the understanding of materials science impacts technologies.	
8.2.5.EC.1	Analyze how technology has contributed to or reduced inequities in local and global communities and determine its short- and long-term effects.	Technological choices and opportunities vary due to factors such as differences in economic resources, location, and cultural

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		values.
Career Readiness, Life Literacies and Key Skills		
Standard	Performance Expectations	Core Ideas
9.4.5.CI.3	Participate in a brainstorming session with individuals with diverse perspectives to expand one’s thinking about a topic of curiosity (CR1a).	Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills.
9.4.5.CI.4	Research the development process of a product and identify the role of failure as a part of the creative process.	
9.4.5.CT.1	Identify and gather relevant data that will aid in the problem-solving process	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills
<p><u>Central Idea/Enduring Understanding:</u></p> <ul style="list-style-type: none"> ● STEAM is a combination of science, technology, engineering, art and mathematics used to solve real world problems with hands-on collaborative learning. ● Simple machines are tools that make work easier. Examples of tasks made easier include lifting a heavy weight, moving a heavy object over a distance, pushing things apart, changing the direction of a force, or holding an object together. ● Structures are designed to provide solutions to a human need. Engineers must understand Science, Technology, Engineering, and Mathematics (STEM) to create structures to meet code and safety specifications. 		<p><u>Essential/Guiding Question:</u></p> <ul style="list-style-type: none"> ● What is engineering and why is it important? ● What do engineers do? ● What is a simple machine? How does it work? How are they used? ● How do simple machines combine to make work easier? ● What are structures and how are they designed/made?
<p><u>Content:</u></p> <ul style="list-style-type: none"> ● Week 1 - Intro to Engineering. What is engineering? ● Week 2 - Identify and differentiate the six types of simple machines: lever, screw, pulley, wheel and axle, inclined plane, and wedge. Differentiate and classify specific examples of simple machines found in school and household items. These include a screwdriver, nutcracker, screw, flagpole pulley, ramp, and seesaw. An example would be that an inclined plane is a ramp to make it easier for a heavy object to be moved up or down. Identify and classify the simple machines which compose a compound machine, such as scissors, wheelbarrow, and bicycle. 		<p><u>Skills (Objectives):</u></p> <ul style="list-style-type: none"> ● Define Engineering and how it applies to my life. ● Identify and explain knowledge of simple machines ● Classify simple machines in the world ● Analyze and explain the function and application of the 6 types of simple machines. ● Use materials provided to construct a structure using multiple simple machines. ● Demonstrate knowledge of materials being used to create a common structure and identify what simple machines make the structure functional.

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- Week 3 - Explore materials for the structure and simple machine unit. Identify materials
- Week 4 - Design and construct an apparatus that contains a simple machine
- Week 5 - Build a given structure trials
- Week 6 - Build a directed structure using simple machines within the structure. Video attempts and explanations identifying materials being used.
- Week 7 - Presentation of video/discussion/reflection/assessment

Interdisciplinary Connections:

NJSLS Anchor Standards & Indicators for Reading

- **NJSLSA.R4.** Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- **NJSLSA.R7.** Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- **NJSLSA.R10.** Read and comprehend complex literary and informational texts independently and proficiently with scaffolding as needed.
- **RI.5.1.** Quote accurately from a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.
- **RI.5.4.** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.

NJSLS Anchor Standards & Indicators for Writing

- **NJSLSA.W2.** Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
- **NJSLSA.W4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- **NJSLSA.W6.** Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
- **NJSLSA.W8.** Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
- **NJSLSA.W10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.
- **W.5.2.D.** Use precise language and domain-specific vocabulary to inform about or explain the topic.
- **W.5.6.** With some guidance and support from adults and peers, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.

NJSLS Anchor Standards for Speaking and Listening

- **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
- **NJSLSA.SL2.** Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
- **NJSLSA.SL5.** Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

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- SL.5.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others’ ideas and expressing their own clearly.
 - SL.5.1.B. Follow agreed-upon rules for discussions and carry out assigned roles.
 - SL.5.1.C Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others
 - SL.5.1.D Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.

NJSLS Anchor Standards & Indicators for Language

- NJSLSA.L1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- NJSLSA.L2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- NJSLSA.L4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
- NJSLSA.L6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.
- L.5.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
 - E. Spell grade-appropriate words correctly, consulting references as needed.
- L.5.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.
 - A. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase.
 - C. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.
- L.5.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., however, although, nevertheless, similarly, moreover, in addition).

Stage 2: Assessment Evidence

Performance Task(s):

- Presentation of completed structure build
- Proper usage and identification of simple machines

Other Evidence:

- Weekly STEAM reflection log (exit ticket)
- Rubric
- Classroom discussions/participation
- Class activities showing knowledge of simple machines and structures (ie. online resources, google forms, etc.)

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Week 1 - Intro to Engineering. What is engineering? What are the different types of engineering? What is the engineering design process?

Resources:

- KWL Chart on engineering
- Introductory video on engineering from Crash Course Kids

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<ul style="list-style-type: none">● Week 2 - Identify and differentiate the six types of simple machines: lever, screw, pulley, wheel and axle, inclined plane, and wedge. Differentiate and classify specific examples of simple machines found in school and household items. These include a screwdriver, nutcracker, screw, flagpole pulley, ramp, and seesaw. An example would be that an inclined plane is a ramp to make it easier for a heavy object to be moved up or down. Identify and classify the simple machines which compose a compound machine, such as scissors, wheelbarrow, and bicycle.● Week 3 - Explore materials for the structure and simple machine unit. Identify materials● Week 4 - Design and construct an apparatus that contains a simple machine● Week 5 - Build a given structure trials● Week 6 - Build a directed structure using simple machines within the structure. Video attempts and explanations identifying materials being used.● Week 7 - Presentation of video/discussion/reflection/assessment● Each class will follow this format:<ul style="list-style-type: none">○ Do Now activity○ Direct instruction○ Discussion/Model○ Apply concepts	<ul style="list-style-type: none">● Mentor text: SAMPLES: <u>Rosie Revere, Engineer</u>, <u>Engineering, The Most Magnificent Thing"</u>, <u>Engineering Design Process, Engineering in our Everyday Lives (on EPIC)</u>, <u>Dream Jobs in Engineering (on EPIC)</u>● https://www.teachengineering.org/content/umo_/lessons/umo_challenges/umo_challenges_lesson01_presentation_v2_tedl_dwc.pdf● Chain Reaction Kits● Chromebooks● Structural Engineering Bridges & Skyscrapers Kit● Simple Machines for Kids Learn all about the 6 simple machines! Video by Clarendon Learning https://www.youtube.com/watch?v=LSfNYpCprw4● Chromebooks● Simple Machine Scavenger Hunt around the classroom with form● Google forms identifying simple machines● STEAM log● Structure and simple machines building materials● STEAM log● Chromebooks● Brainpop Simple Machines● Structure and simple machines building materials● STEAM log● Chromebooks● Structure and simple machines building materials● STEAM log● Chromebooks● Structure and simple machines building materials● STEAM log● Chromebooks● https://www.youtube.com/watch?v=jYeV90caWCI (How to make a video on chromebook and upload to google classroom)● Structure and simple machines building materials● STEAM log● Chromebooks● Misc:● Guest presenters: when available/if applicable
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<ul style="list-style-type: none"> ○ Allow time for independent exploration 			
<p><u>Differentiation</u> *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation</p>			
High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
STEAM Reflection Log Extension Tasks Adaptation of materials and requirements Elevated text or question complexity Independent student options Projects completed individually or with partners Self-selection of research Open-ended activities Expert mentorship	STEAM Reflection Log Varying instructional strategies In-class interventions Compacting activity Extend or abbreviate duration of assignments	STEAM Reflection Log <u>Materials</u> Provide text in alternative formats, such as Braille, large print, audio formats, or digital text Use peer readers Permit highlighting of text List discussion questions prior to reading text Vocabulary lists and/or study guides Provide lecture notes/outline <u>Environment</u> Reduce visual or auditory distractions Preferential seating Post a visual schedule Emphasize multi-sensory learning	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing text ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

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		<p><u>Directions</u> Use oral, recorded, and/or printed directions</p> <p>Highlight key words in directions</p> <p>Give brief and concrete directions</p> <p>Have student verbalize steps</p> <p>Repeat, clarify, or reword directions</p> <p>Scaffolded Instruction</p> <p><u>Time</u> Alert students before transitions</p> <p>Provide additional time for tasks</p> <p>Extra response time</p>	
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Pacing Guide

Course Name	Resource	Standards
MP 1		
Unit 1 Digging into STEAM 8 lessons	<ul style="list-style-type: none"> ● KWL chart about the term technology ● articles/books/videos about technology ● Commonsensemedia.org lessons ● Chromebook shortcut poster ● Chromebook care video 	<ul style="list-style-type: none"> ● Math MP1, MP2, ● 9.2.2.CAP.1, 9.2.5.CAP.3, 9.2.5.CAP.4, ● 9.4.2.DC.2, 9.4.2.DC.3, 9.4.2.DC.4, 9.4.2.DC.5, 9.4.2.DC.6 ● 9.4.2.IML.1, 9.4.2.IML.3 ● 9.4.2.TL.7 ● 9.4.5.CI.4

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	<ul style="list-style-type: none"> ● Code.org ● Learn how to use the video recording on the chromebook ● Coding programs ● Instructional supporting videos ● Complete task assigned with robot ● Rubric ● Make a video ● Chromebooks ● Present video ● STEAM logs/rubric (exit ticket) ● Guest presenters: when available/if applicable 	<ul style="list-style-type: none"> ● 9.4.5.CT.3, 9.4.5.CT.4, ● 9.4.5.DC.1, 9.4.5.DC.2, 9.4.5.DC.3, 9.4.5.DC.4, 9.4.5.DC.5, 9.4.5.DC.6, 9.4.5.DC.7, 9.4.5.DC.8, ● 9.4.5.IML.1, 9.4.5.IML.4, 9.4.5.IML.5, 9.4.5.IML.6, 9.4.5.IML.7 ● 9.4.5.TL.5, 9.4.5.TL.3, ● NJLSA.R4., NJLSA.R7, NJLSA.R8, NJLSA.R.10, RI.5.1, RI.5.4., RI.5.7, NJLSA.W1, NJLSA.W4, NJLSA.W6, NJLSA.W8, NJLSA.W9, NJLSA.W10, N.5.2.D, W.5.6, NJLSA.SL1, NJLSA.SL2, NJLSA.SL5, SL.5.1.B, SL.5.1.C, SL.5.1.D, NJLSA.L.1, NJLSA.L2, NJLSA.L3, NJLSA.L4, NJLSA.L6, L.5.2.E, L.5.3, L.5.4A&C, L.5.6, 8.1.5.NI.2, ● 8.1.5.AP.1, 8.1.5.AP.3, 8.1.5.AP.4, 8.1.5.AP.5, 8.1.5.AP.6, 8.1.5.CS.1, 8.1.5.CS.2, 8.1.5.CS.3 ● 8.2.5.ED.4
MP 2		
Unit 2 Making Connections 8 Weeks	<ul style="list-style-type: none"> ● KWL chart about the term science ● articles/books/videos about electricity and alternate energy ● Google slide presentations on electricity and alternative energy ● Google forms ● STEAM Log ● Snap Circuit Kits ● Rubric ● Chromebooks ● Guest speakers when available 	<ul style="list-style-type: none"> ● 9.4.5.CI3, ● ETS1.A, ETS1.B, ETS1.C, 3-5ETS1-2, 3-5ETS1-3, ● 8.2.5.ED.1, 8.2.5.ED.2, 8.2.5.ED.3, 8.2.5.ED.5, 8.2.5.ED.6, 8.2.5.ITH.2, 8.2.5.ITH.3, 8.2.5.ITH.4, 5-Ess3-1, ● NJLSA.R4, NJLSA. R7, NJLSA.R10, RI5.1, RI5.4, ● NJLSA.W2, NJLSA.W4, NJLSA.W6, NJLSA.W8, NJLSA.W10, W5.2D, ● W5.6, NJLSA.SL1, NJLSA.SL2, NJLSA.SL5, SL5.1, SL5.1.B, SL5.1.C, SL5.1.D, NJLSA.L1, NJLSA.L2, NJLSA.L4,

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		NJSLSA.L6, L.5.2, L5.2.E, L5.4, L5.6
MP 3		
UNIT 3 Learning with Legos 7 lessons	<ul style="list-style-type: none"> ● Video at www.Legoeducation.com ● Lego Education BricQ Motion Essential Set ● Building instructions book ● Chromebooks ● Procedure Slide Show ● STEAM logs/rubric (exit ticket) ● Student worksheet ● Masking tape ● Yardstick ● Unit Online Assessment: ● Online STEAM Reflection Log (weekly) ● Rubric (weekly) ● Stop animation app ● Presentation (end of unit) 	<ul style="list-style-type: none"> ● NJSLSA.R4., NJSLSA.R7.,NJSLSA.R8. NJSLSA.R10. ● RI.5.1.,RI.5.4. ,RI.5.7. ● NJSLSA.W1., NJSLSA.W4. NJSLSA.W6., NJSLSA.W8. ● NJSLSA.W9.,NJSLSA.W10, W.5.2.D. ,W.5.6. ● NJSLSA.L1.,NJSLSA.L2., NJSLSA.L3, NJSLSA.L4. NJSLSA.L6. , L.5.2.E. , L.5.3.,L.5.4., L.5.6. ● 9.2.5.CAP.3, 9.2.5.CAP.4, ● 9.4.5.CI.4, ● 9.4.5.CT.3, 9.4.5.CT.4 ● 9.4.5.DC.1, 9.4.5.DC.2, 9.4.5.DC.3, 9.4.5.DC.4, 9.4.5.DC.5, 9.4.5.DC.6, 9.4.5.DC.7, 9.4.5.DC.8 ● 9.4.5.IML.1, 9.4.5.IML.4, 9.4.5.IML.5, 9.4.5.IML.6, 9.4.5.IML.7 ● 9.4.5.TL.5, 9.4.5.TL.3 ● 8.1.5.NI.1: ● 8.1.5.DA.1, 8.1.5.DA.3, 8.1.5.DA.5 P ● 8.1.8.AP.6, 8.1.8.AP.8 ● 1.2.5.Cr1f, 1.2.5.Cr2b, 1.2.5.Cr2c, 1.2.5.Cr3c
MP 4		
UNIT 4 Simple Machines & Structures 7 weeks	<ul style="list-style-type: none"> ● KWL chart about the term engineering ● articles/books/videos about engineering ● videos/books about simple machines and structures ● Google slide presentations on engineering/simple machines/structures ● Google forms ● STEAM Log ● Simple Machines building 	<ul style="list-style-type: none"> ● Math MP1, MP2, ● Science 3-5-ETS1-2, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3, ● 8.2.5.ED.1, 8.2.5.ED.2, 8.2.5.ED.3, 8.2.5.ED.5, 8.2.5.ED.6 ● 8.2.5.ITH.2, 8.2.5.ITH.3, 8.2.5.ITH.4 ● 8.2.5.NT.1, 8.2.5.NT.2, 8.2.5.NT.3, 8.2.5.NT.4 ● 9.4.5.CI.3, 9.4.5.CI.4,

Innovation Lab Grade 5

	<p>resources</p> <ul style="list-style-type: none">● Structure building materials● Rubric● Chromebooks● Guest speakers when available	<ul style="list-style-type: none">● 9.4.5.CT.1,● NJSLSA.R4, NJSLSA. R7, NJSLSA.R10, RI5.1, RI5.4, NJSLSA.W2, NJSLSA.W4, NJSLSA.W6, NJSLSA.W8, NJSLSA.W10, W5.2D, W5.6,● NJSLSA.SL1, NJSLSA.SL2, NJSLSA.SL5, SL5.1, SL5.1.B, SL5.1.C, SL5.1.D, NJSLSA.L1, NJSLSA.L2, NJSLSA.L4, NJSLSA.L6, L.5.2, L5.2.E, L5.4, L5.6
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