Innovation Lab Grade 4

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.
- **4.M.A.3:** Apply the area and perimeter formulas for rectangles in real world mathematical problems.

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.
- **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.

NJSLS Computer Science and Design Thinking

- **8.1.5.NI.2**: Describe physical and digital security measures for protecting sensitive personal information
- **8.1.5.IC.1**: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes. • 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.AP.1**: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.
- **8.1.5.AP.2**: Create programs that use clearly named variables to store and modify data.
- **8.1.5.AP.3**: Create programs that include sequences, events, loops, and conditionals.
- **8.1.5.AP.4**: Break down problems into smaller, manageable sub-problems to facilitate program development.
- **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.

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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.	
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.	
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

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		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.	Specific situations require the use of relevant sources of information.
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: ● STEAM is a combination of science, technology, engineering, arts, and mathematics used to solve real world problems with hands-on collaborative learning. ● A digital citizen is someone who uses the internet and other digital technology to responsibly participate within their community. ● Protecting your information online is essential for your privacy now and into the future. ● 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.	**Essential/Guiding Question:** ● What is STEAM and why is it important? ● What does it mean to be a responsible digital citizen? ● What steps can be made to protect your information online? ● What is coding and how does it impact my life?
Content: 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/protecting your online identity and chromebook	**Skills (Objectives):** ● Define STEAM and how it can be useful in my life. ● Define technology and research the history of technology. ● Demonstrate knowledge of a STEAM classroom and how it functions (collaboration, location of materials, procedures) ● Explain & demonstrate ways to be a responsible digital citizen. ● Define coding and how it is used in the real world.

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introduction/shortcuts/and care (commonsensemedia.org lessons) Week 5 - Code intro (what is coding, why is it important, how can I use it) – 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	● Use code to program a robot to complete assigned tasks.

Interdisciplinary Connections:

Interdisciplinary curriculum coordination will be done with other departments on a regular basis. The nature of the Innovation Lab (STEAM driven) discipline incorporates:

- 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.

NJSLS ELA Standards

- **RI.CR.4.1.** Refer to details and examples as textual evidence when explaining what an informational text says explicitly and make relevant connections when drawing inferences from the text.
- **RI.MF.4.6.** Use evidence to show how graphics and visuals (e.g., illustrations, charts, graphs, diagrams, timelines, animations) support central ideas.
- **W.IW.4.2**: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- **W.IW.4.2.D**: Use precise language and domain-specific vocabulary to inform about or explain the topic
- **W.WP.4.4:** With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.
- **W.RW.4.7:** Write routinely over extended time frames (with time for research and revision) and shorter time frames (a single sitting) for a range of tasks, purposes, and audiences
- **SL.PE.4.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- **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 to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
- **SL.PE.4.1.D.** Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
- **L.WF.4.2 -**Demonstrate command of the conventions of encoding and spelling.
- **L.WF.4.2.C. -**Spell grade-appropriate words correctly, consulting references as needed.
- **L.KL.4.1. -**Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- **L.KL.4.1.B. -**Choose words and phrases to convey ideas precisely.

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- **L.VL.4.2. -**Determine or clarify the meaning of unknown and multiple-meaning academic and domain-specific words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.
- **L.VL.4.2.A. -**Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.
- **L.VL.4.2.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.4.1.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:

- Completion of weekly exit tickets (STEAM LOG)
- Rubric
- Classroom discussions/participation

Stage 3: Learning Plan

Learning Opportunities/Strategies:	Resources:
• Week 1 - Intro to STEAM (procedures and creating a class rubric). Establish classroom procedures and expectations.	• Commonsensemedia.org • procedure slide show • Chromebooks • STEAM logs/rubric (exit ticket)
• 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.	• KWL chart about the term technology • articles/books/videos about technology • Chromebooks • STEAM logs/rubric (exit ticket)
• Week 3 & 4- Digital citizenship/online safety and chromebook introduction/shortcuts/and care	• Commonsensemedia.org lessons • Chromebook shortcut poster • Chromebook care video • Chromebooks • STEAM logs/rubric (exit ticket) • Google slides presentations on digital citizenship/safety
• Week 5 - Code intro and program tied to coding robot	• Resources TBD • Code.org • Coding programs • Instructional supporting videos • Chromebooks • STEAM logs/rubric (exit ticket) • Learn how to use the video recording on the chromebook for video presentations • Create a Maze

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	• Keva Bot Maze
• Week 6 - Practice coding using coding software	• Resource TBD • Code.org • Coding programs • Instructional supporting videos • Chromebooks • STEAM logs/rubric (exit ticket) • Create a Maze • Keva Bot Maze
• Week 7 - Coding task trials and videoing trials	• Resource TBD • Complete task assigned with robot • Rubric • Make a video for presentation of coded robot using chromebook software • Chromebooks • STEAM logs/rubric (exit ticket) • Create a Maze • Keva Bot Maze
• Week 8 - Coding presentation/reflection/assessment	• Chromebooks • Present video • STEAM logs/rubric (exit ticket)
• Each class will follow this format: ○ Do Now activity ○ Direct instruction ○ Discussion/Model ○ Apply concepts ○ Allow time for independent exploration	• Misc: • Guest presenters: when available/if applicable

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

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	STEAM Reflection Log Varying instructional strategies In-class interventions Compacting activity Extend or abbreviate duration of assignments	STEAM Reflection Log **Materials** Provide text in alternative formats, such as Braille, large print, audio formats, or digital text Use peer readers	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,

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Independent student options Projects completed individually or with partners Self-selection of research Open-ended activities Expert mentorship		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 Highlight key words in directions Give brief and concrete directions Have student verbalize steps Repeat, clarify, or reword directions Scaffolded Instruction **<u>Time</u>** Alert students before transitions Provide additional time for tasks Extra response time	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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Unit Title: Unit 2: Making Connections

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.
- **4.M.A.3:** Apply the area and perimeter formulas for rectangles in real world mathematical problems.

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.
- **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.

NJSLS Computer Science and Design Thinking

- **8.2.5.ED.1**: Explain the functions of a system and its subsystems.
- **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. •
- **8.2.5.ED.6**: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.
- **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 and a willingness to try new ideas (intellectual risk-taking) contributes to the development of

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	curiosity.	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.

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.

Light energy is sound energy is a kind of kinetic energy with the ability to make types of light visible to human eyes.

Sound energy is the movement of energy through a substance – like air or water – and is caused by vibrations. Solids, liquids and gasses transmit sound as waves.

Essential/Guiding Question:

- What is STEAM and why is it important?
- What is electricity?
- What makes a circuit work?
- What is a switch?
- What is the difference between an open and closed electric circuit?
- What is the difference between a series and parallel circuit?
- What is light and sound energy? How are they alike and different?

Content:

Week 1 - Intro to electricity & snap circuits

Week 2 - Types of circuits

Week 3- Explore Light and sound energy.

Week 4- Modeling of video recording

Week 5- Build a circuit

Week 6- Create your own circuit.

Week 7- Create your own circuit.

Week 8- Presentations

Skills (Objectives):

- Make observations to show that energy can be transferred from place to place by sound, light, heat, and electric currents.
- Apply scientific principles of energy and motion to test and refine a device that converts kinetic energy to electrical energy or uses stored energy to cause motion or produce light or sound.
- Students will be able to describe how circuits works
- Students will be able to follow directions to create different kinds of circuits.
- Students will be able to design their own circuit.
- Areas emphasized: building, testing, and troubleshooting circuits, and the basic physics of electricity.

Interdisciplinary Connections:

NJSLS Anchor Standards & Indicators for Speaking and Listening

- **SL.PE.4.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- **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 to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
- **SL.PE.4.1.D.** Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

NJSLS Anchor Standards & Indicators for Language

- **L.WF.4.2 -**Demonstrate command of the conventions of encoding and spelling.
- **L.WF.4.2.C. -**Spell grade-appropriate words correctly, consulting references as needed.

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- **L.VL.4.2. -**Determine or clarify the meaning of unknown and multiple-meaning academic and domain-specific words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.
- **L.VL.4.2.A. -**Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.
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- **L.KL.4.1.A. -**Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases.

Stage 2: Assessment Evidence

Performance Task(s):

- Presentation of 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.

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 #'s TBD

Week 3- Explore Light and sound energy and how they move.

Resources:

- Snap Circuit arcade
- 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 arcade 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 arcade Kit
- Chromebooks
- STEAM log/exit ticket
- What is light energy?- **https://youtu.be/LCEqlvHFIhM**
- What is sound?- **https://youtu.be/3-xKZKxXuu0**

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Week 4- Intro to procedure and modeling videoing for circuit project build. Practice using chromebook to record, project #TBD	• 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 arcade Kit • Chromebooks • STEAM log/exit ticket
Week 5- Complete project #'s TBD and practice recording giving objective and explanation.	• Snap Circuit arcade Kit • Chromebooks • STEAM log/exit ticket
Week 6- Create your own circuit. Identify type of circuit. Record the path the electricity flows through using a chromebook camera.	• Snap Circuit arcade Kit • Chromebooks • STEAM log/exit ticket • Mentor Text
Week 7- Create your own circuit. Identify type of circuit. Record the path the electricity flows through using a chromebook camera.	• Snap Circuit arcade Kit • Chromebooks • STEAM log/exit ticket
Week 8- Presentation of video/discussion/reflection/assessment	• Snap Circuit arcade Kit • Chromebooks • STEAM log/exit ticket

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

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	STEAM Reflection Log Varying instructional strategies In-class interventions Compacting activity Extend or abbreviate duration of assignments	STEAM Reflection Log **Materials** 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	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

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Open-ended activities Expert mentorship		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 Highlight key words in directions Give brief and concrete directions Have student verbalize steps Repeat, clarify, or reword directions Scaffolded Instruction **<u>Time</u>** Alert students before transitions Provide additional time for tasks Extra response time	Allow for translators, dictionaries

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Unit Title: Unit 3: Learning with Legos

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.

NJSLS Computer Science and Design Thinking

- **8.1.5.NI.1**: Develop models that successfully transmit and receive information using both wired and wireless devices.
- **8.1.5.DA.1** Collect, organize and display data in order to highlight relationships or support a claim.
- **8.1.5.DA.3** Organize and present collected data visually to communicate insights gained from different views of the data.
- **8.1.5.DA.5** Purpose cause and effect relationships, predict outcomes, or communicate ideas using data.
- **8.1.8.AP.6** Refine a solution to meet users' needs by incorporating feedback from team members and users.
- **8.1.8.AP.8** Systematically test and refine programs using a range of test cases and users.

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.PE.4.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- **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 to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
- **SL.PE.4.1.D.** Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

NJSLS Art Anchor Standard 1: Generating and conceptualizing ideas

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

NJSLS Art Anchor Standard 2: Organizing and developing ideas

- **1.2.5.Cr2b**: Model ideas, plan in an effective direction.
- **1.2.5.Cr2c**: Brainstorm goals and plans for a media art audience.

NJSLS 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.

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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.

Essential/Guiding Question:

- What is STEAM and why is it important?
- Which creation can do the best running, jumping or throwing?

Content:

Week 1- Lego Learning and Exploration
Week 2 - Race Car
Week 3 - Free Throw
Week 4 - Bobsled
Week 5 -Stop Motion Introduction
Week 6 - Stop Motion Recording
Week 7 - Presentation/reflection/assessment

Skills (Objectives):

- 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.

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.R8**. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
- **NJSLSA.R10**. Read and comprehend complex literary and informational texts independently and proficiently with scaffolding as needed.
- **RI.CR.4.1.** Refer to details and examples as textual evidence when explaining what an informational text says explicitly and make relevant connections when drawing inferences from the text.

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- **RI.MF.4.6.** Use evidence to show how graphics and visuals (e.g., illustrations, charts, graphs, diagrams, timelines, animations) support central ideas.

NJSLS Anchor Standards 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.IW4.2**: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- **W.IW.4.2.D**: Use precise language and domain-specific vocabulary to inform about or explain the topic
- **W.WP.4.4:** With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.
- **W.RW.4.7:** Write routinely over extended time frames (with time for research and revision) and shorter time frames (a single sitting) for a range of tasks, purposes, and audiences

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.PE.4.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- **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 to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
- **SL.PE.4.1.D.** Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

NJSLS Anchor Standards 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.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.

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- **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.WF.4.2 -**Demonstrate command of the conventions of encoding and spelling.
- **L.WF.4.2.C. -**Spell grade-appropriate words correctly, consulting references as needed.
- **L.KL.4.1. -**Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- **L.KL.4.1.B. -**Choose words and phrases to convey ideas precisely.
- **L.VL.4.2. -**Determine or clarify the meaning of unknown and multiple-meaning academic and domain-specific words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.
- **L.VL.4.2.A. -**Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.
- **L.VL.4.2.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.4.1.A. -**Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases.

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
● Creation of Lego model. ● Completing a given task.	● Weekly STEAM reflection log (exit ticket) ● Rubric ● Classroom discussions/participation

Stage 3: Learning Plan

Learning Opportunities/Strategies:	**Resources:**
● Week 1: Lego learning and exploration	● Video at www.Legoeducation.com ● Lego Education BricQ Motion Essential Set ● Building instructions book ● Chromebooks ● Procedure Slide Show ● STEAM logs/rubric (exit ticket)
● Week 2-Race Car	● Video at www.Legoeducation.com ● Lego Education BricQ Motion Essential Set ● Building instructions book ● Chromebooks ● STEAM logs/rubric (exit ticket) ● Yardstick ● Student worksheet
● Week 3:Free Throw	● Video at www.Legoeducation.com ● Lego Education BricQ Motion Essential Set ● Building instructions book

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	• Chromebooks • STEAM logs/rubric (exit ticket) • Student worksheet
• Week 4-Bobsled	• Video at www.Legoeducation.com • Lego Education BricQ Motion Essential Set • Building instructions book • Chromebooks • STEAM logs/rubric (exit ticket) • Yardstick • Masking Tape • Student worksheet
• Week 5-Stop Motion Introduction	• Video at www.Legoeducation.com • Lego Education BricQ Motion Essential Set • Building instructions book • Chromebooks • STEAM logs/rubric (exit ticket) • Student worksheet • TinkerCad to create main character • Use Lego Briq Essentials creation for stop motion animation video
• Week 6 -Stop Motion Recording	• https://www.google.com/search?q=stop+motion+on+chromebook&rlz=1C1CHBF_enUS913US913&oq=stop+motion+on+chrom&aqs=chrome.0.0i512j69i57j0i22i30l4j0i10i22i30j0i390l3.2798j0j7&sourceid=chrome&ie=UTF-8&safe=active&ssui=on#kpvalbx=_SAwEYczrKoOQ_QaH1YqQCw19 (Stop Motion How to) • Stop Motion Slide Show • Examples of Stop Motion videos https://www.digitalwish.com/dw/digitalwish/view_lesson_plans?id=6404 • How to use the chromebook camera instructional video • Stop motion animation app from chrome store • Chromebook • Steam log • Props for stop motion • Green tri fold boards • Art supplies for backdrop • TinkerCad • TinkerCad to create main character • Use Lego Briq Essentials creation for stop motion animation video
• Week 7 - Presentation/reflection/assessment	• Video presentations • Lego Kits

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Each class will follow this format: Do now activity Direct Instruction Discussion/Model Apply Concepts Allow time for independent exploration	• Chromebook • Steam Log (exit ticket)

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

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 **Materials** 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 **Environment** 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 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

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

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.
- **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.

New Jersey Student Learning Standards – Computer Science and Design Thinking

- **8.1.5.NI.1**: Develop models that successfully transmit and receive information using both wired and wireless devices.
- **8.1.5.DA.1** Collect, organize and display data in order to highlight relationships or support a claim.
- **8.1.5.DA.3** Organize and present collected data visually to communicate insights gained from different views of the data.
- **8.1.5.DA.5** Purpose cause and effect relationships, predict outcomes, or communicate ideas using data.

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- **8.1.8.AP.6** Refine a solution to meet users' needs by incorporating feedback from team members and users.
- **8.1.8.AP.8** Systematically test and refine programs using a range of test cases and users.

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 .	

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.
- 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.

Essential/Guiding Question:

- 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?

Content:

- 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

Skills (Objectives):

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.

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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	● Use materials provided to construct a structure using simple machines. ● Demonstrate knowledge of materials being used to create a common structure and identify what simple machines make the structure functional.

Interdisciplinary Connections:

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.R8.** Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
- **NJSLSA.R10**. Read and comprehend complex literary and informational texts independently and proficiently with scaffolding as needed.
- **RI.CR.4.1.** Refer to details and examples as textual evidence when explaining what an informational text says explicitly and make relevant connections when drawing inferences from the text.
- **RI.MF.4.6.** Use evidence to show how graphics and visuals (e.g., illustrations, charts, graphs, diagrams, timelines, animations) support central ideas.

Anchor Standards 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.
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- **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.

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- **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.
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- **W.IW.4.2.D**: Use precise language and domain-specific vocabulary to inform about or explain the topic
- **W.WP.4.4:** With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.
- **W.RW.4.7:** Write routinely over extended time frames (with time for research and revision) and shorter time frames (a single sitting) for a range of tasks, purposes, and audiences

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.PE.4.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- **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 to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
- **SL.PE.4.1.D.** Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

Anchor Standards 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.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.WF.4.2 -**Demonstrate command of the conventions of encoding and spelling.
- **L.WF.4.2.C. -**Spell grade-appropriate words correctly, consulting references as needed.
- **L.KL.4.1. -**Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- **L.KL.4.1.B. -**Choose words and phrases to convey ideas precisely.
- **L.VL.4.2. -**Determine or clarify the meaning of unknown and multiple-meaning academic and domain-specific words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.

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- **L.VL.4.2.A. -**Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.
- **L.VL.4.2.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.4.1.A. -**Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases.

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
• Presentation of completed structure build • Proper usage and identification of simple machines	• 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:	**Resources:**
• Week 1 - Intro to Engineering. What is engineering? What are the different types of engineering? What is the engineering design process?	• KWL Chart on engineering • Introductory video on engineering from Crash Course Kids • Mentor text: SAMPLES: Rosie Revere, Engineer Engineering, The Most Magnificent Thing" Engineering Design Process, Engineering in our Everyday Lives (on EPIC), Dream Jobs in Engineering (on EPIC) • https://www.teachengineering.org/content/umo_/lessons/umo_challenges/umo_challenges_lesson01_presentation_v2_tedl_dwc.pdf
• 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.	• Chromebooks • Chain Reaction Kits • Building Brick Challenge Kit • Simple Machines for Kids | Learn all about the 6 simple machines! Video by Clarendon Learning • Brainpop Simple Machines • Chromebooks • Google forms identifying simple machines • STEAM log
• Week 3 - Explore materials for the structure and simple machine unit. Identify materials	• Structure and simple machines building materials • STEAM log • Chromebooks

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• 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:
  ○ Do Now activity
  ○ Direct instruction
  ○ Discussion/Model
  ○ Apply concepts
  ○ Allow time for independent exploration
	• Present video
	• STEAM logs/rubric (exit ticket)
	
	• Misc:
	• Guest presenters: when available/if applicable

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

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 **Materials** 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 **Environment**	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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		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 Highlight key words in directions Give brief and concrete directions Have student verbalize steps Repeat, clarify, or reword directions Scaffolded Instruction **<u>Time</u>** Alert students before transitions Provide additional time for tasks Extra response time	

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Pacing Guide

Course Name	Resource	Standards
MP 1 Digging Into Stem/ Coding		
UNIT 1 Digging into STEAM • 8 lessons	• KWL chart about the term technology • Articles/books/videos about technology • Commonsensemedia.org lessons • Chromebook shortcut poster • Chromebook care video • 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	• 9.2.5.CAP.3, 9.2.5.CAP.4 • 9.4.2.DC.2 • 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 • NJSLSA.R4., NJSLSA.R7, NJSLSA.R8, NJSLSA.R.10, • RI.4.1, RI.4.4., RI.4.7, • NJSLSA.W1, NJSLSA.W.4, NJSLSA.W6, NJSLSA.W8, NJSLSA.W9, NJSLSA.W10, N.4.2.D, W.4.6 • NJSLSA.SL1, NJSLSA.SL2, NJSLSA.SL5, SL.4.1.B, SL.4.1.C, SL.4.1.D • NJSLSA.L.1, NJSLSA.L2, NJSLSA.L3, NJSLSA.L4, NJSLSA.L6 • L.4.2.D, L.4.3, L.4.4A&C, L.4.6 • 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
MP 2		
UNIT 2 Making Connections • 8 Lessons	• What is light energy?- **https://youtu.be/LCEqlvHFIhM** • What is sound?- **https://youtu.be/3-xKZKxXuu0** • Circuit kits • Task cards • Rubric • Online STEAM Reflection	• 3-5-ETS1 Engineering Design • 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.4: • 9.4.5.CI.3 • NJSLSA.SL, NJSLSA.SL2, NJSLSA.SL5 • SL.4.1, SL.4.6

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	Log ● Presentation	
MP 3		
UNIT 3 Learning with Legos ● 7 lessons	● 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) ● Presentation (end of unit)	● 8.1.5.NI.1, 8.1.5.DA.1, 8.1.5.DA.3, 8.1.5.DA.5, 8.1.8.AP.6, 8.1.8.AP.8 S ● 9.2.5.CAP.3, 9.2.5.CAP.4 ● 9.4.5.CI.4, 9.4.5.CT.4 ● NJSLSA.R4, NJSLSA.R7, NJSLSA.R8, NJSLSA.R10 ● RI.4.1, RI.4.4, RI.4.7 ● NJSLSA.W1, NJSLSA.W4, NJSLSA.W6, NJSLSA.W8, NJSLSA.W9, NJSLSA.W10 ● W.4.2, W.4.6 ● NJSLSA.SL1, NJSLSA.SL2, NJSLSA.SL5 ● SL.4., NJSLSA.L6 ● L.4.2, L.4.3, L.4.4, L.4.6 ● 1.2.5.Cr1f, 1.2.5.Cr2b, 1.2.5.Cr2c, 1.2.5.Cr3c
MP 4		
UNIT 4 Simple Machines & Structures ● 7 Lessons	● 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 form ● STEAM Log ● Simple Machines building resources ● Structure building materials ● Rubric ● Chromebooks ● Guest speakers when available	● 8.1.5.NI.1: , 8.1.5.DA.1, 8.1.5.DA.3 ,8.1.5.DA.5, 8.1.8.AP.6 ,8.1.8.AP.8 ● 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 ● NJSLSA.R4,NJSLSA.R7, NJSLSA.R8, NJSLSA.R10, ● RI.4.1, RI.4.4, RI.4.7 ● NJSLSA.W1, NJSLSA.W4, NJSLSA.W6, NJSLSA.W8, NJSLSA.W9, NJSLSA.W10 ● W.4.2, W.4.6. ● NJSLSA.SL1, NJSLSA.SL2, NJSLSA.SL5, SL.4.1 ● NJSLSA.L1, NJSLSA.L2., NJSLSA.L3., NJSLSA.L4 NJSLSA.L6. ● L.4.2., L.4.3., L.4.4., L.4.6