Kindergarten STEM Curriculum Map:

Unit: Essential Questions	State Standards	Learning Targets	Resources/ Mentor Text	Assessments	Lesson Ideas:
Science: What kinds of motion are observable? What can we learn about motion through investigations How do shape, size	P.FM.E.1 Position- A position of an object can be described by locating the object relative to other objects or a background. *	I can Describe the position of an object (for example: above, below, in front of, behind, on) in relation to other objects around it.	Kindergarten in Motion: Battle Creek Science Kit	Formative assessments are ongoing throughout the year.	Marble Maze Tug a War Observe and use playground equipment Hurtles for above and below.
and weight affect motion? How do pushes and pulls affect motion?	P.FM.E.2 Gravity- Earth pulls down on all objects with a force called gravity. With very few exceptions, objects fall to the ground no matter where the object is on the Earth.	I can describe the direction of a moving object (for example: away from or closer to) from different observers' views.			Gravity- Ramps and weight of objects.
How does force affect motion? What will happen when objects are thrown in the air?	P.FM.E.3 Force- A force is either a push or a pull. The motion of objects can be changed by forces. The size of the change is related to the size of the force. The change is also related to the weight (mass)	I can observe how objects fall toward the earth.			

	of the object on which the force is being exerted. When an object does not move in response to a force, it is because another force is being applied by the environment.	I can demonstrate pushes and pulls on objects that can move. * I can observe that objects initially at rest will move in the direction of the push or pull. I can observe how pushes and pulls can change the speed or direction of moving objects. I can observe how shape (for example: cone, cylinder, sphere) and mass of an object can affect motion. *		
Technology: How can I use technology to collaborate with my peers? What are the basic functions when navigating the iPad?	PK-2.CC.1. work together when using digital tools (e.g., word processor, drawing, presentation software) to convey ideas or illustrate simple concepts relating to a specified project. PK-2.TC.7.	I can operate and use my iPad appropriately. I can collaborate with my peers using technology. I can navigate effectively when using the iPad.		

	demonstrate the ability to navigate in virtual environments (e.g., electronic books, games, simulation software, web sites)			
Engineering How to build a stable structure?		I can build a structure that has a solid foundation, lots of support features and is balanced.		
How does gravity affect our builds?		I can describe the effects of gravity as it relates to building structures. I can build shapes using materials. I can make improvements to my design.		

<u>Math</u>	<u>Measurement</u> :	I can compare measurements of two	
	Describe and compare	objects.	
	measurable attributes.		
	CCSS.MATH.CONTENT.		
	K.MD.A.1 Describe		
	measurable attributes of		
	objects, such as length or		
	weight. Describe several		
	measurable attributes of a		
	single object.		
	CCSS.MATH.CONTENT.		
	K.MD.A.2		
	Directly compare two		
	objects with a measurable		
	attribute in common, to		
	see which object has		
	"more of"/"less of" the		
	attribute, and describe the		
	difference. For example,		
	directly compare the		
	heights of two children		
	and describe one child as		
	taller/shorter.		

Geometry: CCSS.MATH.CONTENT. K.G.A.2 Correctly name shapes regardless of their orientations or overall size. CCSS.MATH.CONTENT. K.G.A.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid" Analyze, compare, create and compose shapes. CCSS.MATH.CONTENT. K.G.B.4 Analyze and compare two- and three-dimensional shapes in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length). CCSS.MATH.CONTENT. K.G.B.5 Model shapes in the world by building shapes from components (e.g., sticks and clay) shapes.	I can compare shapes and forms.		
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1st Grade STEM Curriculum:

Unit: Essential Questions	State Standards	Learning Targets	Resources/ Mentor Text	Assessments	Lesson Ideas:
Science How do you sort objects using physical properties? Why does water keeps its shape as a solid?	P.PM.E.1 Physical Properties- All objects and substances have physical properties that can be measured.	I can demonstrate the ability to sort objects according to observable attributes such as color, shape, size, sinking or floating.	Battle Creek Science Kit Unit	Formative assessments are ongoing throughout the year.	Buoyancy with Candy (around Halloween) Weight with Candy (around Halloween) Color Mixing
Why does water take the shape of its container as a liquid? What materials are attracted to a magnet?	P.PM.E.2 States of Matter- Matter exists in several different states: solids, liquids and gases. Each state of matter has unique physical properties. Gases are easily compressed but liquids and solids	I can demonstrate that water as a solid keeps its own shape (ice).			
What poles of a magnet of attract to each other and what poles repel?	do not compress easily. Solids have their own particular shapes, but liquids and gases take the shape of the container.	I can demonstrate that water as a liquid takes on the shape of various			

	P.PM.E.3 Magnets- Magnets can repel or attract other magnets. Magnets can also attract magnetic objects. Magnets can attract and repel at a distance. *	containers. I can identify materials that are attracted by magnets. I can observe that like poles of a magnet repel and unlike poles of a magnet attract.		
Technology: How can I use technology to collaborate with my peers?	PK-2.CC.1. work together when using digital tools (e.g., word processor, drawing, presentation software) to convey ideas or illustrate simple concepts relating to a specified project	I can operate and use my iPad appropriately. I can collaborate with my peers using technology.		Book Creator
What are the basic functions when navigating the iPad?	PK-2.TC.7. demonstrate the ability to navigate in virtual environments (e.g., electronic books, games, simulation soft- ware, web sites)	I can navigate effectively when using the iPad.		

Engineering How to build a stable structure?		I can build a structure that has a solid foundation, lots of support features and is balanced.		
How does gravity affect our builds? What shape boats would hold the most		I can describe the effects of gravity as it relates to building structures. I can build a boat		
weight and floats?		that floats.		
		I can test the buoyancy of my boat. I can mprov		
<u>Math</u>	Measurement:			
	CCSS.MATH.CONTENT.1.M D.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.	I can order and compare objects length.		
	CCSS.MATH.CONTENT.1.M	I can measure		

D.A.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps	using nonstandard units. I can distinguish and build shapes, focusing on sides and corners.			
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shapes			
(rectangles,			
squares,			
trapezoids,			
triangles,			
half-circles, and			
quarter-circles) or			
three-dimensional			
shapes (cubes,			
right rectangular			
prisms, right			
circular cones, and			
right circular			
cylinders) to create			
a composite			
shape, and			
compose new			
shapes from the			
composite shape.1			
composite snape.1			

2nd Grade STEM Curriculum:

Unit: Essential Questions	State Standards	Learning Targets	Resources/ Mentor Text	Assessments
Science What are metric and standard units of measurement? What measure tool is best used to measure	P.PM.E.1 Physical Properties- All objects and substances have physical properties that can be measured.	I can measure in metric and standard units. I can determine the type of tool to use to measure length and width.	Battle Creek Science Kits	Formative assessments are ongoing throughout the year.
length and width? Can you find objects that are the same size? What is the length of various objects in CM and Meters?	P.PM.02.12 Describe objects and substances according to their properties (color, size, shape, texture, hardness, liquid or solid, sinking or floating).	I can find objects that are the same size. I can measure the length of objects in CM and meters. I can use squares to find the width, length		
How can you use squares to find width, length and area? How can you measure capacity? How do you describe different substances?	P.PM.02.13 Measure the length of objects using rulers (centimeters) and meter sticks (meters). P.PM.02.14 Measure the volume of liquids	and area. I can measure capacity. I can describe substances by sight, smell and feel?		

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What will happen when different substances are mixed together? How is a balance used to compare objects? If two substances have the same volume, will they have the same mass? What are examples of single substances and mixtures?	using common measuring tools (graduated measuring cups, measuring spoons, graduated cylinders, and beakers).* P.PM.02.15 Compare the weight of objects using balances. P.PM.E.4 Material Composition- Some objects are composed of a single substance, while other objects are composed of more than one substance.	I can observe what happens when different substances are mixed together. I can use a balance to compare the weight of objects. I can explain why two substances can have the same volume but different masses. I can list examples of single substances and mixtures.		
	P.PM.02.41 Recognize that some objects are composed of a single substance (water, sugar, salt) and others are composed			

	of more than one substance (salt and pepper, mixed dry beans). *		
Technology	PK-2.Cl.1. use a variety of digital tools (e.g., word processors, drawing tools, simulations, presentation software, graphical organizers) to learn, create, and convey original ideas or illustrate concepts	I can operate and use my iPad appropriately. I can collaborate with my peers using technology. I can navigate effectively when using the iPad.	
	PK-2.CC.1. work together when using digital tools (e.g., word processor, drawing, presentation software) to convey ideas or illustrate simple concepts relating to a specified project		
	PK-2.CC.2. use a variety of developmentally appropriate digital tools (e.g., word processors, paint programs) to communicate ideas to classmates, families, and others		
	PK-2.DC.1. describe		

	appropriate and inappropriate uses of technology (e.g., computers, Internet, e-mail, cell phones) and describe consequences of inappropriate uses PK-2.DC.3. identify personal information that should not be shared on the Internet (e.g. name, address, phone) PK-2.TC.1. discuss advantages and disadvantages and disadvantages of using technology PK-2.TC.2. be able to use basic menu commands to perform common operations (e.g., open, close, save, print)			
Engineering How to build a structure that capable of measurable movement?		I can make improvements to my design. I can build a structure capable of measuring movement.	Paper Airplanes Catapults Structure builds Sugar Cube Arches	

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<u>Math</u>		I can measure	
	Measure and	distance and time.	
	estimate lengths in	I can measure length	
	standard units.	in different unit.	
	CCSS.MATH.CONTENT.2.M		
	D.A.1		
	Measure the length		
	of an object by		
	selecting and		
	using appropriate		
	tools such as		
	rulers, yardsticks,		
	meter sticks, and		
	measuring tapes.		
	CCSS.MATH.CONTENT.2.M D.A.2		
	D.A.2		
	Measure the length		
	of an object twice,		
	using length units		
	of different lengths		

for the two
measurements;
describe how the
two measurements
relate to the size of
the unit chosen.
CCSS.MATH.CONTENT.2.M D.A.3
Estimate lengths
using units of
inches, feet,
centimeters, and
meters.
CCSS.MATH.CONTENT.2.M D.A.4
Measure to
determine how
much longer one
object is than

another,		
expressing the		
length difference		
in terms of a		
standard length		
<u>unit.</u>		

3rd Grade STEM Curriculum Map:

Unit: Essential Questions	State Standards	Learning Targets	Resources/ Mentor Text	Assessments
Science How does light affect sight in the human eye?	P.EN.E.1 Forms of Energy- Heat, electricity, light, and sound are forms of energy.	I can describe how light affects sight in the human eye. I can describe how light travels.	Battle Creek Science Kit	Formative assessments are ongoing throughout the year.
How does light travel? How do different materials interact with light? How are shadows	P.EN.03.11 Identify light and sound as forms of energy. P.EN.E.2 Light Properties- Light travels in a straight path. Shadows	I can describe how different materials interact with light. I can describe how shadows are made.		

made? What determines the position and length of position and length of made? I can determine the position and length of a shadow.	
a shadow? Substance to another (air and water), it changes made? I can describe that sounds are made through vibrations.	
What causes a change in pitch? P.EN.03.21 Demonstrate that light travels in a straight path and that shadows are made by placing an object in a path of light. * P.EN.03.22 Observe what happens to light when it travels from air to water (a straw half in the water and half in the air looks bent). * P.EN.E.3 Sound-Vibrating objects produce sound. The pitch of sound varies by changing the rate of vibration. P.EN.03.31 Relate sounds to their	

	(for example: a musical note produced by a vibrating guitar string, the sounds of a drum made by the vibrating drum head). P.EN.03.32 Distinguish the effect of fast or slow vibrations as pitch.		
Technology	3-5.Cl.1. produce a media-rich digital project aligned to state curriculum standards (e.g., fable, folk tale, mystery, tall tale, historical fiction) 3-5.Cl.2. use a variety of technology tools and applications to demonstrate his/her creativity by creating or modifying works of art, music, movies, or presentations	I can operate and use my iPad appropriately. I can collaborate with my peers using technology. I can navigate effectively when using the iPad.	

3-5.CC.1. use digital communication tools (e.g., e-mail, wikis, blogs, IM, chat rooms, video conferencing, Moodle, Blackboard) and online resources for group learning projects		
3-5-2.CC.2. identify how different software applications may be used to share similar information, based on the intended audience (e.g., presentations for classmates, newsletters for parents)		
3-5-2.CC.3. use a variety of media and formats to create and edit products (e.g., presentations, newsletters, brochures, web pages) to communicate information and ideas to various audiences		
3-5.Rl.1. identify search strategies for locating information with support from teachers or library media specialists 3-5.Rl.2. use digital tools to find,		

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syn eva 3-5.F disc and may	anize, analyze, thesize, and luate information RI.3. understand and cuss that web sites I digital resources y contain inaccurate biased information		
usir a si sou the erro that sho	RI.4. understand that ng information from ngle Internet rece might result in reporting of oneous facts and t multiple sources uld always be earched		
info com tech calc vide edu to c and info	CT.2. use ormation and nmunication hnology tools (e.g., culators, probes, eos, DVDs, cational software) collect, organize, levaluate ormation to assist h solving problems		
resc and stat glot glot eco	CT.3. use digital ources to identify I investigate a te, national, or bal issue (e.g., bal warming, nomy, rironment)		

3-5.DC.1. discuss scenarios involving acceptable and unacceptable uses of technology (e.g., file-sharing, social networking, text messaging, cyber bullying, plagiarism)		
3-5.DC.2. recognize issues involving ethical use of information (e.g., copyright adherence, source citation) 3-5.DC.3. describe precautions surrounding personal safety that should be taken when online		
3-5.DC.4. identify the types of personal information that should not be given out on the Internet (name, address, phone number, picture, school name)		
3-5.TC.1. use basic input and output devices (e.g., printers, scanners, digital cameras, video recorders, projectors) 3-5.TC.2. describe ways technology has		

	changed life at school and at home 3-5.TC.3. understand and discuss how assistive technologies can benefit all individuals 3-5.TC.4. demonstrate proper care in the use of computer hardware, software, peripherals, and storage media 3-5.TC.5. know how to exchange files with other students using technology (e.g., network file sharing, flash drives)			
Engineering		I can make improvements to my design.	 Bridges Media Center Perimeter and Area Design- Room Planner 	
Math	CCSS.MATH.CONTENT.3.M D.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths	I can use a ruler to measure to 1/4 of an inch. I can identify and discuss shapes and forms.		

of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units-whole numbers, halves, or quarters. CCSS.MATH.CONTENT.3.G .A.1 **Understand that** shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the **shared attributes** can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as

examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these	
subcategories.	

4th Grade STEM Curriculum:

Unit: Essential Questions	State Standards	Learning Targets	Resources/ Mentor Text	Assessments
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<u>Science</u>	P.EN.E.1 Forms of	I can describe heat	Battle Creek Science	Formative assessments
What is heat energy?	Energy- Heat, electricity, light, and	energy.	Kit.	are ongoing throughout the year.
	sound are forms of energy.	I can observe		
How can we observe	<u>chergy.</u>	changes associated		
changes associated	P.EN.04.12 Identify	with the transfer of		
with the transfer of	heat and electricity	heat energy.		
heat energy?	as forms of energy.			
How is heat	P.EN.E.4 Energy and	I can describe how heat is produced.		
produced?	Temperature-	neat is produced.		
produced:	Increasing the temperature of any	I can describe		
What happens to a	substance requires	temperature change.		
temperature when a hot substance and a	the addition of energy.			
temperature when a hot substance and a	<u>'</u>			

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cold substance are combined?	P.EN.04.41 Demonstrate how			
What changes can be observed as a result of electricity?	temperature can be increased in a substance by adding energy.	I can observe and describe the pathway		
How do you light a light bulb?	P.EN.04.42 Describe heat as the energy produced when	of electricity focusing on source, path and load.		
How can electrical energy be transferred or changed to light energy?	substances burn, certain kinds of materials rub against each other, and when electricity flows through wire.			
What is necessary to have an electric circuit?	P.EN.04.43 Describe how heat is produced through electricity, rubbing,	I can name materials that are poor and good conductors of electricity.		
What types of materials are good	and burning.	I can explain how a switch works.		
and poor conductors of electricity?	P.EN.E.5 Electrical Circuits- Electrical circuits transfer	I can name materials		
How can a switch open and close an electrical circuit?	electrical energy and produce magnetic fields.	attracted to a magnet.		
What materials are attracted to a magnet?	P.EN.04.51 Demonstrate how electrical energy is transferred and	I can demonstrate that a magnet is strongest at the poles.		

What metals are attracted to a magnet?	changed through the use of a simple circuit. *	I can demonstrate that a magnet has two poles.	
How can you tell that magnets are the strongest at the poles?	P.EN.04.52 Demonstrate magnetic effects in a simple electric circuit. *	I can demonstrate magnets repel and attract a the poles.	
How can you tell that a magnet has two poles?			
What can you observe about like and unlike poles of magnets?			

<u>Technology</u>	3-5.Cl.1. produce a media-rich digital project aligned to state curriculum standards (e.g., fable, folk tale, mystery, tall tale, historical fiction)	I can operate and use my iPad appropriately. I can collaborate with my peers using technology.	
	3-5.Cl.2. use a variety of technology tools and applications to demonstrate his/her creativity by creating	I can navigate effectively when using the iPad.	

or modifying works of art, music, movies, or presentations		
3-5.CC.1. use digital communication tools (e.g., email, wikis, blogs, IM, chat rooms, video conferencing, Moodle, Blackboard) and online resources for group learning projects		
3-5-2.CC.2. identify how different software applications may be used to share similar information, based on the intended audience (e.g., presentations for classmates, newsletters for parents)		
3-5-2.CC.3. use a variety of media and formats to create and edit products (e.g., presentations, newsletters, brochures, web pages) to communicate information and ideas to various audiences		
3-5.Rl.1. identify search strategies for locating information with		

support from teachers or library media specialists 3-5.Rl.2. use digital tools to find, organize, analyze, synthesize, and evaluate information 3-5.Rl.3. understand and discuss that web sites and digital resources may contain inaccurate or biased information		
3-5.Rl.4. understand that using information from a single Internet source might result in the reporting of erroneous facts and that multiple sources should always be researched		
3-5.CT.2. use information and communication technology tools (e.g., calculators, probes, videos, DVDs, educational software) to collect, organize, and evaluate information to assist with solving problems		
3-5.CT.3. use digital resources to identify and investigate a state, national, or		

global issue (e.g., global warming, economy, environment)		
3-5.DC.1. discuss scenarios involving acceptable and unacceptable uses of technology (e.g., file-sharing, social networking, text messaging, cyber bullying, plagiarism)		
3-5.DC.2. recognize issues involving ethical use of information (e.g., copyright adherence, source citation) 3-5.DC.3. describe precautions surrounding personal safety that should be taken when online		
3-5.DC.4. identify the types of personal information that should not be given out on the Internet (name, address, phone number, picture, school name)		
3-5.TC.1. use basic input and output devices (e.g., printers, scanners, digital		

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<u>cameras, video</u> recorders, projectors)	
3-5.TC.2. describe	
ways technology has	
changed life at school	
and at home	
3-5.TC.3. understand and discuss how	
assistive technologies	
can benefit all	
<u>individuals</u>	
3-5.TC.4. demonstrate	
proper care in the use	
of computer hardware, software, peripherals,	
and storage media	
3-5.TC.5. know how to	
exchange files with	
other students using	
technology (e.g.,	
network file sharing, flash drives)	
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Engineering		I can make improvements to my design.	Rockets Minecraft Desk Organizer	
<u>Math</u>	CCSS.MATH.CONTENT.4.M D.A.3 Apply the area and perimeter formulas	I can find area and perimeter. I can identify a line of symmetry.		

I can represent a line of symmetry in my design.		
	of symmetry in my design.	of symmetry in my design.

figure can be folded along line into ma parts. Identifine-symmer figures and	the ching fy ric draw	
lines of sym	metry.	