

HPS Scope & Sequence
K-8 Grade Level Essential Skills
Created: August 2009
Last Revision: June 2010

Grade Level: Kindergarten
Subject: Science






Howell Public Schools (HPS), like many of our fellow Michigan districts, has studied the work of Dr. Robert Marzano and other educational consultants. In his book *What Works in Schools: Translating Research into Action*, Marzano points to the necessity of school districts having a “guaranteed and viable curriculum.” Marzano stresses the importance of everyone in the school community understanding what skills will be taught for mastery at each grade level, and then guaranteeing that happens. Using this research, our district has undertaken the task of creating an aligned curriculum that prepares students to successfully meet the academic rigors of Michigan’s Grade Level Content Expectations (GLCEs).

During the 2008-09 school year small groups of teachers worked under the guidance of curriculum consultants and HPS administrators to study the core content curriculums of English, math, science and social studies. Through professional development efforts, these groups learned to identify subsets of fundamental, non-negotiable content expectations that require a higher degree of mastery than the other expectations within the content area. HPS has chosen to call these fundamental, non-negotiable content expectations for each grade level subject “Essential Skills”. Teacher groups then assigned a recommended number of lessons, per quarter, needed to successfully teach each GLCE, thus securing the curriculum as viable. Vocabulary, a researched component to uniform student achievement, was identified by quarter (nine-week sessions). Examples of formative assessments were provided for each expectation, with the creation of uniform summative assessments to follow the final approval of this document. Upon completion of draft essential skills for each subject, the teacher groups used supporting MDE documents to align their chosen skills horizontally for grades kindergarten through eight.






The essential skills found within this document were then piloted in the 2009-2010 school year, with our teaching staff providing on-going feedback on the document during this pilot. At the conclusion of each semester the original teacher groups re-assembled under the guidance of educational consultants and HPS administration to review the edit suggestions. These steps culminated in revisions and a secure document that will remain fluid.

It should be noted that as a subset of Michigan’s Grade Level Content Expectations, the overall number of expectations identified as essential skills is smaller than the total articulated within the State’s course expectation documents. This is the intentional result of a process that asked teacher leaders to identify fundamental content expectations that require a higher degree of mastery than others included within the discipline. Expectations that were not considered fundamental to the success of all students are not included in this document, but may be found on the MDE web site at http://www.michigan.gov/mde/0,1607,7-140-28753_33232---,00.html






1 of 4 Rotating Quarters: Senses (KPS1)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Science Activities	Vocabulary	Embedded Assessment(s)
	Students will						
Science Processes : Inquiry Process						senses touch taste smell hearing sight color words	student journal pages
Statement S.IP.E.1	Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.	Thinking of questions and finding answers by doing an experiment.	Y				class discussion
S.IP.00.11	Make purposeful observation of the natural world using the appropriate senses.	Students will learn about the world around them using the five senses.	Y	13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	sense of sight shape words size words	sound identification Things I observe With My Senses" booklet teacher observations
S.IP.00.12	Generate questions based on observations.	Students will make new questions based on new findings.	Y	1	4	hand lens observe ear	pre-assessment
S.IP.00.13	Plan and conduct simple investigations.	Plan and do experiments	Y	2	11, 12	sense of hearing sound descriptive words	post assessment handouts
S.IP.00.14	Manipulate simple tools (for example: hand lens, pencils, balances, non-standard objects for measurement) that aid observation and data collection.	Use scientific tools to do experiments.	Y	2	2, 4	sense of touch touch descriptive words nose	oral response investigations
S.IP.00.16	Construct simple charts from data and observations.	make graphs based on experiments.	Y	3	6, 7, 9	sense of smell smell descriptive words sense of taste taste descriptive words tongue	science talk placemat
Science Processes: Inquiry Analysis and Communication							
Statement S.IA.E.1	Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.	Apply information to future experiments.	Y				






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Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Science Activities	Vocabulary	Embedded Assessment(s)
	Students will						
S.IA.00.12	Share ideas about science through purposeful conversation.	Discuss learning from experiments.	Y	6	7, 8, 9, 10, 11, 12		
S.IA.00.13	Communicate and present findings of observations.	Discuss learning from experiments.	Y	6	7, 9, 10, 11, 12, 13		
S.IA.00.14	Develop strategies for information gathering (ask an expert, use a book, make observations, conduct simple investigations, and watch a video).	Learn how to collect information.	Y	6	1, 5, 6, 7, 9, 11		
Science Processes : Reflection and Social Implications							
Statement S.RS.E.1	Reflecting on knowledge is the application of scientific knowledge to new and different situations. Reflecting on knowledge requires careful analysis of evidence that guides decision making and the application of science throughout history and within society.	Students will apply what they learn in science to their everyday lives.	Y				
S.RS.00.11	Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.	Show knowledge in various ways.	Y	1	13		
Science Processes : Inquiry Process							






1 of 4 Rotating Quarters: Senses (KPS1)




Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Science Activities	Vocabulary	Embedded Assessment(s)
	Students will						
Statement S.IP.E.1	Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.	Thinking of questions and finding answers by doing an experiment.	Y				
S.IP.00.11	Make purposeful observation of the natural world using the appropriate senses.	Students will learn about the world around them using the five senses.	Y	13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13,		
S.IP.00.12	Generate questions based on observations.	Students will make new questions based on new findings.	Y	1	4		
S.IP.00.13	Plan and conduct simple investigations.	Plan and do experiments	Y	2	11, 12		
S.IP.00.14	Manipulate simple tools (for example: hand lens, pencils, balances, non-standard objects for measurement) that aid observation and data collection.	Use scientific tools to do experiments.	Y	2	2, 4		
S.IP.00.16	Construct simple charts from data and observations.	Make graphs based on experiments.	Y	3	6, 7, 9		
Science Processes : Inquiry Analysis and Communication							
Statement S.IA.E.1	Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.	Apply information to future experiments.	Y				
S.IA.00.12	Share ideas about science through purposeful conversation.	Discuss learning from experiments.	Y	6	7, 8, 9, 10, 11, 12		






1 of 4 Rotating Quarters: Senses (KPS1)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Science Activities	Vocabulary	Embedded Assessment(s)
	Students will						
S.IA.00.13	Communicate and present findings of observations.	Discuss learning from experiments.	Y	6	7, 9, 10, 11, 12, 13		
S.IA.00.14	Develop strategies for information gathering (ask an expert, use a book, make observations, conduct simple investigations, and watch a video).	Learn how to collect information.	Y	6	1, 5, 6, 7, 9, 11		
Science Processes : Reflection and Social Implications							
S.RS.00.11	Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.	Show knowledge in various ways.	Y	1	13		






* Note: The first quarter of science will be spent teaching the year-long inquiry skills and the science process

1 of 4 Rotating Quarters - In Motion (KPS2)							
Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will						
Science Processes : Inquiry Process						observation direction words motion position position words push pull speed words force lift heavy light position away from toward farther closer	student journal pages class discussion (whole and small group) demonstrate a push and a pull and how it affects the movement of the ball teacher observations pre-assessment post assessment handouts oral response investigations science talk
Statement S.IP.E.1	Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.	Thinking of questions and finding answers by doing an experiment.	Y				
S.IP.00.11	Make purposeful observation of the natural world using the appropriate senses.	Students will learn about the world around them using the five senses.	Y	9	1, 2, 3, 4, 6, 7, 8, 9, 11		
S.IP.00.12	Generate questions based on observations.	Students will make new questions based on new findings.	Y	6	1, 2, 4, 7, 8, 9		
S.IP.00.13	Plan and conduct simple investigations.	Plan and do experiments	Y	7	2, 3, 4, 6, 7, 8, 9		
S.IP.00.14	Manipulate simple tools (for example: hand lens, pencils, balances, non-standard objects for measurement) that aid observation and data collection.	Use scientific tools to do experiments.	Y	1	3		
S.IP.00.15	Make accurate measurements with appropriate (non-standard) units for the measurement tool.	Use appropriate science tools for measurement.	Y	3	3, 8, 9		
S.IP.00.16	Construct simple charts from data and observations.	Make graphs based on experiments.	Y	2	6, 9		
Science Processes : Inquiry Analysis and Communication							
Statement S.IA.E.1	Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.	Apply information to future experiments.	Y				
S.IA.00.12	Share ideas about science through purposeful conversation.	Discuss learning from experiments.	Y	10	1, 2, 4, 5, 6, 7, 8, 9, 10, 11		
S.IA.00.13	Communicate and present findings of observations.	Discuss learning from experiments.	Y	11	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11		






1 of 4 Rotating Quarters - In Motion (KPS2)							
Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will						
S.IA.00.14	Develop strategies for information gathering (ask an expert, use a book, make observations, conduct simple investigations, and watch a video).	Learn how to collect information.	Y	5	3, 5, 6, 8, 9		
Science Processes : Reflection and Social Implications							
Statement S.RS.E.1	Reflecting on knowledge is the application of scientific knowledge to new and different situations. Reflecting on knowledge requires careful analysis of evidence that guides decision making and the application of science throughout history and within society.	Students will apply what they learn in science to their everyday lives.	Y				
S.RS.00.11	Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.	Show knowledge in various ways.	Y	2	6, 7		
Physical Science: Force and Motion							
Statement P.FM.E.1	A position of an object can be described by locating the object relative to other objects or a background. The description of the motion of an object from one observer's view may be different from that reported from a different observer's view.	Tell the location of an object by comparing it to another's location.	B				
P.FM.00.11	Compare the position of an object (for example: above, below, in front of, behind, on) in relation to other objects around it.	Be able to tell the place of an object	B	4	1, 2, 10, 11		

1 of 4 Rotating Quarters - In Motion (KPS2)							
Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will						
P.FM.00.12	Describe the motion of an object (for example: away from or closer to) from different observers' views.	Tell how something moves from different points.	B	4	1, 2, 10, 11		
Statement 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.	Gravity pulls objects to the Earth.	B				
P.FM.00.21	Observe how objects fall toward the earth.	Learn and see that objects fall to the earth.	B	3	7, 8, 9		
Statement 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) 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.	Know the definition of force.	B				
P.FM.00.31	Demonstrate pushes and pulls.	Show a push and a pull.	B	5	2, 3, 5, 6, 9		
P.FM.00.32	Observe that objects initially at rest will move in the direction of the push or pull.	Watch/see that a non-moving object will move in the direction of the push or pull	B	4	2, 3, 5, 9		
P.FM.00.33	Observe how pushes and pulls can change the speed or direction of moving objects.	Watch or see how a push or pull will change the speed or direction of an object.	B	2	2, 5		
P.FM.00.34	Observe how shape (for example: cone, cylinder, sphere), size, and weight of an object can affect motion.	Watch or see how the shape, size, and weight of an object can change how it moves.	B	4	2, 4, 6, 8		





1 of 4 Rotating Quarters : My Earth (KES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment
	Students will			11 			
Science Process: Inquiry Processes						Earth globe earth materials pebbles sand soil water rocks air litter	student journal pages
Statement S.IP.E.1	Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.	Thinking of questions and finding answers by doing an experiment.	Y				teacher observations pre-assessment post assessment
S.IP.00.11	Make purposeful observation of the natural world using the appropriate senses.	Students will learn about the world around them using the five senses.	Y	5	2, 3, 5, 6, 7		handouts (planting seeds, Which One Is Not Like the Others?)
S.IP.00.12	Generate questions based on observations.	Students will make new questions based on new findings.	Y	5	2, 3, 4, 9, 10		oral response
S.IP.00.13	Plan and conduct simple investigations.	Plan and do experiments	Y	3	3, 4, 10		class discussion (whole group and small group)
S.IP.00.14	Manipulate simple tools (for example: hand lens, pencils, balances, non-standard objects for measurement) that aid observation and data collection.	Use scientific tools to do experiments.	Y	3	2, 3, 9		summary discussion
S.IP.00.16	Construct simple charts from data and observations.	make graphs based on experiments.	Y	6	1, 4, 5, 8, 9, 10		science talk
Science Processes: Inquiry and Communication							
Statement S.IA.E.1	Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.	Apply information to future experiments.	Y				






1 of 4 Rotating Quarters : My Earth (KES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment
	Students will						
S.IA.00.12	Share ideas about science through purposeful conversation.	Discuss learning from experiments.	Y	8	1, 4, 5, 6, 7, 9, 10, 11		
S.IA.00.13	Communicate and present findings of observations.	Discuss learning from experiments.	Y	4	5, 6, 7, 8		
S.IA.00.14	Develop strategies for information gathering (ask an expert, use a book, make observations, conduct simple investigations, and watch a video).	Learn how to collect information.	Y	3	1, 5, 11		
Science Processes: Reflection and Social Implications							
Statement S.RS.E.1	Reflecting on knowledge is the application of scientific knowledge to new and different situations. Reflecting on knowledge requires careful analysis of evidence that guides decision making and the application of science throughout history and within society.	Students will apply what they learn in science to their everyday lives.	Y				
S.RS.00.11	Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.	Show knowledge in various ways.	Y	7	1, 2, 5, 7, 8, 9, 11		
Earth Science: Solid Earth							






1 of 4 Rotating Quarters : My Earth (KES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment
	Students will			11			
Statement E.SE.E.1	Earth Materials- Earth materials that occur in nature include rocks, minerals, soils, water, and the gases of the atmosphere. Some Earth materials have properties which sustain plant and animal life.	Identify earth materials and understand that plants and animals use the earth materials in life.	C				
E.SE.00.11	Identify Earth materials (air, water, soil) that are used to grow plants.	Know what makes a plant grow.	C	6	2, 3, 4, 7, 9, 10		

1 of 4 Rotating Quarters: Is It Living? (KLS)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will						
Science Processes : Inquiry Process						hand lens living nonliving growth have babies movement take in food	student journal pages
Statement S.IP.E.1	Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.	Thinking of questions and finding answers by doing an experiment.	Y				teacher observations
S.IP.00.11	Make purposeful observation of the natural world using the appropriate senses.	Students will learn about the world around them using the five senses.	Y	4	3, 5, 7, 10	plant seed flower	pre-assessment post assessment
S.IP.00.12	Generate questions based on observations.	Students will make new questions based on new findings.	Y	2	5, 7	leaves observe	handouts (Living Nonliving, Sorting Seeds, Planting Seeds)
S.IP.00.13	Plan and conduct simple investigations.	Plan and do experiments	Y	2	3, 7	plant parts roots stem	oral response
S.IP.00.14	Manipulate simple tools (for example: hand lens, pencils, balances, non-standard objects for measurement) that aid observation and data collection.	Use scientific tools to do experiments.	Y	1	5	limbs shell skin	investigations
S.IP.00.16	Construct simple charts from data and observations.	Make graphs based on experiments.	Y	4	1, 4, 8, 9	animal animal home movement alike	class discussion (whole and small group)
Science Processes : Inquiry Analysis and Communication						animal body parts different backbone limbs movement eye color	T-Chart Science talk <i>Watching Our</i>
Statement S.IA.E.1	Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.	Apply information to future experiments.	Y				
S.IA.00.12	Share ideas about science through purposeful conversation.	Discuss learning from experiments.	Y	9	2, 3, 5, 6, 7, 8, 9, 10, 11		

1 of 4 Rotating Quarters: Is It Living? (KLS)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will						
S.IA.00.13	Communicate and present findings of observations.	Discuss learning from experiments.	Y	10	1, 3, 4, 5, 6, 7, 8, 9, 10, 12	feather color flower shape hair color parent young animal home habitat	<i>Plants Grow!</i> Booklet
S.IA.00.14	Develop strategies for information gathering (ask an expert, use a book, make observations, conduct simple investigations, and watch a video).	Learn how to collect information.	Y	6	3, 5, 6, 8, 10, 11		summary discussion
Science Processes : Reflection and Social Implications							
Statement S.RS.E.1	Reflecting on knowledge is the application of scientific knowledge to new and different situations. Reflecting on knowledge requires careful analysis of evidence that guides decision making and the application of science throughout history and within society.	Students will apply what they learn in science to their everyday lives.	Y				Student responses Clay models Class charts Mural Atlas
Life Science: Organization of Living Things							
Statement L.OL.E.1	Organisms have basic needs. Animals and plants need air, water, and food. Plants also require light. Plants and animals use food as a source of energy and as a source of building material for growth and repair.	Students will know the needs of plants and animals.	D				
L.OL.00.11	Identify that living things have basic needs.	know the basic needs of living things.	D	4	3, 4, 5, 6		
L.OL.00.12	Identify and compare living and nonliving things.	Know the difference between living and nonliving things.	D	5	1, 2, 3, 5, 10		
* Note: days and times are based on the alternate day/ a.m./ p.m. schedule							

1 of 4 Rotating Quarters: Is It Living? (KLS)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of Science Activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
		Students will	