

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

Grade Level: First Grade  
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](http://www.michigan.gov/mde/0,1607,7-140-28753_33232---,00.html)

1 of 4 Rotating Quarters - Sorting Things Out (1PS)							
Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .			13 			
<b>Science Processes: Inquiry Process</b>						property shape size texture weight rough smooth flexible rigid magnet attract like pole repel unlike float sink properties of water liquid solid downhill	Student journals pre-assessment post-assessment teacher observation oral response student handouts student investigations class discussion activity page team activity science talk class chart small group activity group activity prewriting strategy venn diagram
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.01.11	Make purposeful observation of the natural world using the appropriate senses.	Students will learn about the world around them by using the five senses.	Y	11	1,2,3,4,5,6,7,8,9,11,12		
S.IP.01.12	Generate questions based on observations.	Students will make new questions based on new findings.	Y	2	6,11		
S.IP.01.13	Plan and conduct simple investigations.	Plan and do experiments.	Y	3	6,8,11,3,11		
S.IP.01.14	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	3,11		
S.IP.01.16	Construct simple charts from data and observations.	Make graphs based on experiments.	Y	3	3,4,8		
<b>Science Processes: Inquiry Analysis and Communication</b>							
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.01.12	Share ideas about science through purposeful conversation.	Discuss learning from experiments.	Y	3	3,4,8		

1 of 4 Rotating Quarters - Sorting Things Out (1PS)							
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.01.13	Communicate and present findings of observations.	Discuss learning from experiments.	Y	8	1,2,4,5,8,10,11,12		
S.IA.01.14	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	2,5,7,10,12		
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 have learned in science to their everyday lives.	Y				
S.RS.01.11	Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.	Show knowledge in various ways.	Y	1	13		
Physical Science: Properties of Matter							
Statement P.FM.E.1	Physical Properties- All objects and substances have physical properties that can be measured.	Objects can be measured.	A				

## 1 of 4 Rotating Quarters - Sorting Things Out (1PS)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .					13	
P.PM.01.11	Demonstrate the ability to sort objects according to observable attributes such as color, shape, size, sinking or floating.	Students will be able to sort objects.	A	8	1,2,3,4,5,8,9,13		
Statement 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 do not compress easily. Solids have their own particular shapes, but liquids and gases take the shape of the container.	Know states of matter (solids liquids and gas).	A				
P.PM.01.21	Demonstrate that water as a solid keeps its own shape (ice).	Know the property of a solid.	A	2	9,11		
P.PM.01.22	Demonstrate that water as a liquid takes on the shape of various containers.	Know the property of a liquid.	A	2	9,10		
Statement P.PM.E.3	Magnets- Magnets can repel or attract other magnets. Magnets can also attract certain non-magnetic objects at a distance.	Experiment using magnets.	A				

1 of 4 Rotating Quarters - Sorting Things Out (1PS)							
Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .					13	
P.PM.01.31	Identify materials that are attracted to magnets.	Know objects that magnets attract.	A	3	5,6,13		
P.PM.01.32	Observe that like poles of a magnet repel and unlike poles of a magnet attract.	Know that opposite ends of a magnet pull towards each other and similar ends of a magnet push away.	A	2	7,13		

# 1 of 4 Rotating Quarters- Weather Watchers (1ES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .			6			
							
<b>Science Processes: Inquiry Process</b>						observation precipitation weather weather observations cloud cover temperature air Celsius Fahrenheit thermometer breezy calm wind windy windsock clear cloudy partly cloudy water vapor rain gage hail sleet snow season summer fall winter	Student journals pre-assessment post-assessment teacher observation oral response student handouts student investigations activity page class discussion summary discussion science talk prewriting strategy Venn diagram student books student presentations
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.01.11	Make purposeful observation of the natural world using the appropriate senses.	Students will learn about the world around them by using the five senses.	Y	4	11,12,13,14		
S.IP.01.12	Generate questions based on observations.	Students will make new questions based on new findings.	Y	1	15		
S.IP.01.14	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	4	11,12,13,14		
S.IP.01.15	Make accurate measurements with appropriate (non-standard) units for the measurement tool.	Use appropriate scientific tools for measurement.	Y	4	11,12,13,14		
S.IP.01.16	Construct simple charts from data and observations.	Make graphs based on experiments.	Y	4	11,12,13,14		
<b>Science Processes Inquiry Analysis and Communication</b>							
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- Weather Watchers (1ES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .			6			
							
S.IA.01.12	Share ideas about science through purposeful conversation.	Discuss learning from experiments.	Y	6	11 thru 16	winter spring data evidence	
S.IA.01.13	Communicate and present findings of observations.	Discuss learning from experiments.	Y	2	15,16		
S.IA.01.14	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	11 thru 16		
<b>Science Processes: Reflection and Social Implications</b>							
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 have learned in science to their everyday lives.	Y				
S.RS.01.11	Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.	Show knowledge in various ways.	Y	5	11,12,13,14,16		
<b>Earth Science: Earth Systems</b>							

## 1 of 4 Rotating Quarters- Weather Watchers (1ES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .			6			
							
Statement E.ES.E.1	Solar Energy- The sun warms the land, air and water and helps plants grow.	Know the definition of solar energy.	C				
E.ES.01.11	Identify the sun as the most important source of heat which warms the land, air, and water of the Earth.	Know the sun is most important in warming Earth.	C	2	14,16		
E.ES.01.12	Demonstrate the importance of sunlight and warmth in plant growth.	Know that plants need sunlight and warmth from the sun to grow.	C	2	14,16		
Statement E.ES.E.2	Weather- Weather changes from day to day and over the seasons.	Know that weather changes.	C				
E.ES.01.21	Compare daily changes in the weather related to temperature (cold, hot, warm, cool); cloud cover (cloudy, partly cloudy, foggy) precipitation (rain, snow, hail, freezing rain); wind (breezy, windy, calm).	Watch the weather and compare differences that are seen.	C	5	11 thru 15		
E.ES.01.22	Describe and compare weather related to the four seasons in terms of temperature, cloud cover, precipitation, and wind.	Understand that the four seasons have different types of weather.	C	6	11 thru 16		
E.ES.01.23	Describe severe weather events.	Understand thunderstorms, lightning, tornadoes, high winds, blizzards, hurricanes.	C	4	11, 12, 13, 14		

## 1 of 4 Rotating Quarters- Weather Watchers (1ES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .			6			
							
E.ES.01.24	Describe precautions that should be taken for human safety during severe weather conditions (thunderstorms, lightning, tornadoes, high winds, blizzards, hurricanes).	Know what to do in case of severe weather.	C	4	11, 12, 13, 14		
Statement E.ES.E.3	Weather Measurement- Scientists use tools for observing, recording, and predicting weather changes.	Understand that there are tools used for measuring weather.	C				
E.ES.01.32	Observe and collect data of weather conditions over a period of time.	Keep track of weather conditions each day for several days.	C	4	11 thru 14		

## 1 of 4 Rotating Quarters - Weather Watchers (1ES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .						
<b>Science Processes: Inquiry Process</b>						observation precipitation weather weather observations cloud cover temperature air Celcius Fahrenheit thermometer breezy calm wind windy windsock clear cloudy partly coludy water vapor rain gage hail sleet snow season summer fall	Student journals pre-assessment post-assessment teacher observation oral response student handouts student investigations class discussion class chart science talk small group discussion schoolyard outing summary discussion observation chart venn diagram
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.01.11	Make purposeful observation of the natural world using the appropriate senses.	Students will learn about the world around them by using the five senses.	Y	10	1 thru 10		
S.IP.01.12	Generate questions based on observations.	Students will make new questions based on new findings.	Y	5	1,2,4,8,10		
S.IP.01.13	Plan and conduct simple investigations.	Plan and do experiments.	Y	4	1,4,9,10		
S.IP.01.14	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	8	3,4,5,6,7,8,9,10		
S.IP.01.15	Make accurate measurements with appropriate (non-standard) units for the measurement tool.	Use appropriate scientific tools for measurement.	Y	8	3,4,5,6,7,8,9,10		
S.IP.01.16	Construct simple charts from data and observations.	Make graphs based on experiments.	Y	5	1,2,3,4,7		

## 1 of 4 Rotating Quarters - Weather Watchers (1ES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .			10			
<b>Science Processes: Inquiry Analysis and Communication</b>						winter spring data evidence north south east west	
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.01.12	Share ideas about science through purposeful conversation.	Discuss learning from experiments.	Y	9	1,2,3,5,6,7,8,9,10		
S.IA.01.13	Communicate and present findings of observations.	Discuss learning from experiments.	Y	4	3,4,5,10		
S.IA.01.14	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	10	1 thru 10		
<b>Science Processes: Reflection and Social Implications</b>							

## 1 of 4 Rotating Quarters - Weather Watchers (1ES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .						
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 have learned in science to their everyday lives.	Y				
S.RS.01.11	Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.	Show knowledge in various ways.	Y	4	5,6,7,10		
S.RS.01.12	Recognize that science investigations are done more than one time.	Notice that experiments are done more than once.	Y	1	8		
<b>Earth Science: Earth Systems</b>							
Statement E.ES.E.2	Weather- Weather changes from day to day and over the seasons.	Know that weather changes.	B				

## 1 of 4 Rotating Quarters - Weather Watchers (1ES)

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activities	Vocabulary	Embedded Assessment(s)
	Students will . . . .						
E.ES.01.21	Compare daily changes in the weather related to temperature (cold, hot, warm, cool); cloud cover (cloudy, partly cloudy, foggy) precipitation (rain, snow, hail, freezing rain); wind (breezy, windy, calm).	Watch the weather and compare differences that are seen.	B	10	1 thru 10		
Statement E.ES.E.3	Weather Measurement- Scientists use tools for observing, recording, and predicting weather changes.	Understand that there are tools used for measuring weather.	B				
E.ES.01.31	Identify the tools that might be used to measure temperature, precipitation, cloud cover and wind.	Know the tools to use to find weather measurements.	B	6	3,4,5,6,9,10		
E.ES.01.32	Observe and collect data of weather conditions over a period of time.	Keep track of weather conditions each day for several days.	B	10	1 thru 10		

## 1 of 4 Rotating Quarters- An Animal's Life (1LS)

Standard OR GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activity	Vocabulary	Embedded Assessment(s)
				15			
	Students will . . . .						
<b>Science Processes: Inquiry Process</b>						habitat observation observe conclude needs of life organism alike different adult egg life cycle young centimeter investigation larva predict chrysalis pupa survive food chain predator prey	Student journals pre-assessment post-assessment teacher observation oral response student handouts student investigations activity page class discussion class chart outdoor exploration prewriting strategy venn diagram literacy integration group discussion science talk/student posters and presentations group activity
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.01.11	Make purposeful observation of the natural world using the appropriate senses.	Students will learn about the world around them by using the five senses.	Y	15	1,2,3,4,5,6,7,8,9 10,11,12,13,14, 15		
S.IP.01.12	Generate questions based on observations.	Students will make new questions based on new findings.	Y	4	1,2,3,6		
S.IP.01.13	Plan and conduct simple investigations.	Plan and do experiments.	Y	2	2,7		
S.IP.01.14	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	4	1,2,3,6		

## 1 of 4 Rotating Quarters- An Animal's Life (1LS)

Standard OR GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activity	Vocabulary	Embedded Assessment(s)
				15			
	Students will . . . .						
S.IP.01.15	Make accurate measurements with appropriate (non-standard) units for the measurement tool.	Use appropriate scientific tools for measurement.	Y	1	6		
S.IP.01.16	Construct simple charts from data and observations.	Make graphs based on experiments.	Y	5	4,6,7,11,15		
<b>Science Processes: Inquiry Analysis and Communication</b>							
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.01.12	Share ideas about science through purposeful conversation.	Discuss learning from experiments.	Y	11	1,2,3,4,5,8,9,10,11,12,15		
S.IA.01.13	Communicate and present findings of observations.	Discuss learning from experiments.	Y	5	3,5,9,13,15		
S.IA.01.14	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	7	1,4,5,7,8,9,14		
<b>Science Processes: Reflection and Social Implications</b>							

## 1 of 4 Rotating Quarters- An Animal's Life (1LS)

Standard OR GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activity	Vocabulary	Embedded Assessment(s)
				15			
	Students will . . . .						
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 have learned in science to their everyday lives.	Y				
S.RS.01.11	Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.	Show knowledge in various ways.	Y	1	13		
S.RS.01.12	Recognize that science investigations are done more than one time.	Notice that experiments are done more than once.	Y	1	7		
<b>Life Science: Organization of Living Things</b>							

## 1 of 4 Rotating Quarters- An Animal's Life (1LS)

Standard OR GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activity	Vocabulary	Embedded Assessment(s)
				15			
	Students will . . . .						
Statement L.O.L.E.1	Life Requirements- 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.O.L.01.13	Identify the needs of animals.	Know what animals need to live.	D	11	3,4,6,7,8,9,10,12		
Statement L.O.L.E.2	Life Cycles- Plants and animals have life cycles. Both plants and animals begin life and develop into adults, reproduce, and eventually die. The details of this life cycle are different for different organisms.	Know the life cycles of plants and animals.	D				
L.O.L.01.21	Describe the life cycle of animals including the following stages: egg, young, adult; egg, larva, pupa, adult.	Know that animals have life cycles.	D	6	4,5,6,8,12,13,14		
<b>Life Science: Heredity</b>							

## 1 of 4 Rotating Quarters- An Animal's Life (1LS)

Standard OR GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activity	Vocabulary	Embedded Assessment(s)
				15			
	Students will . . . .						
Statement L.HE.01.11	Observable Characteristics- Plants and animals share many, but not all, characteristics of their parents.	Know plants and animals share some characteristics of their parents.	D				
L.HE.01.11	Identify characteristics (for example: body coverings, beak shape, number of legs, body parts) that are passed on from parents to young.	Know the characteristics that plants and animals receive from their parents.	D	3	11,12,14,15		
L.HE.01.12	Classify young animals based on characteristics that are passed on from parents (for example: dogs/puppies, cats/kittens, cows/calves, chicken/chicks).	Be able to sort young animals into correct groups.	D	3	12,14,15		
<b>D</b>							
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.	Understand that there are various types of substances on Earth. Some of these substances are used by plants and animals.	D				

## 1 of 4 Rotating Quarters- An Animal's Life (1LS)

Standard OR GLCE #	Standard or GLCE Language	What this means:	Q	# of science activities	Corresponding Battle Creek Activity	Vocabulary	Embedded Assessment(s)
				15			
	Students will . . . .						
E.SE.01.12	Describe how Earth materials contribute to the growth of plant and animal life.	Show that plants and animals use materials from Earth to live.	D	1	10		