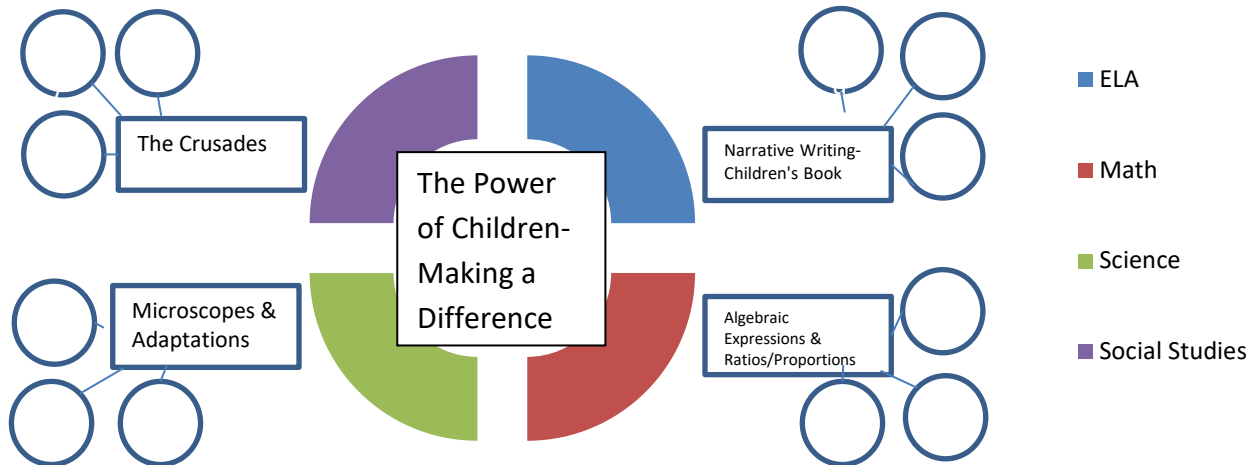
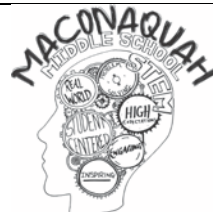
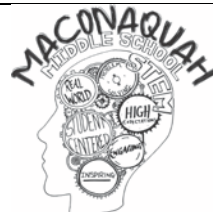
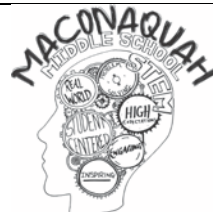


Maconaquah Middle School

6th Grade STEM Unit Plan #2- The Power of Children



Grade Level	6		Unit Length	9 weeks															
Unit Overview	<i>Students will learn about making a difference through writing a children's book and giving philanthropically.</i>																		
Unit Essential Question(s)	What can I do to make a difference in my school community and my world?																		
Culminating Events	<ul style="list-style-type: none"> Field trip to International Festival (to learn about Guatemalan culture). Work time in Language Arts & "project days" to work in groups components of presentation will include the idea, implementation, timetable, needs list, research & data analysis, adaptation (a different teacher will explain each part of the project using a Google hangout). 6th grade will develop and implement one school community project as a large group (with STEM community members)- 4th hour classes divide up components of project (4th hour has extra time daily) as well as a project with an orphanage in Guatemala. Affective Ed. class will also participate in the final 6th grade project. Project and results will be published on the school website before Christmas break; final drafts of books will be completed and published later in the year. 																		
Common Assessment	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="text-align: center; vertical-align: middle;">  </td> <td colspan="2" style="text-align: center;">STEM Project Rubric</td> <td style="text-align: center;">Project Title: Student Name: Date:</td> </tr> <tr> <td style="text-align: center;">Advanced</td> <td style="text-align: center;">Proficient</td> <td style="text-align: center;">Needs Improvement</td> </tr> <tr> <td style="background-color: #ffcccc;">Math Components</td> <td colspan="3">Student will pass all ratio/proportion and expression quizzes with average score of 70% or above.</td> </tr> <tr> <td style="background-color: #ffcccc;">Ratios/ Proportions</td> <td>Student demonstrates his/her understanding of ratios/proportions by including two or more ratios/proportions using the correct terms and notations in the final project.</td> <td>Student demonstrates his/her understanding of ratios/proportions by including one ratio/proportion using the correct terms and notations in the final project.</td> <td>Student includes at least one ratio but does not use the correct terms and/or notations in the final project. Student does not include a ratio/proportion in the final project.</td> </tr> </table>					STEM Project Rubric		Project Title: Student Name: Date:	Advanced	Proficient	Needs Improvement	Math Components	Student will pass all ratio/proportion and expression quizzes with average score of 70% or above.			Ratios/ Proportions	Student demonstrates his/her understanding of ratios/proportions by including two or more ratios/proportions using the correct terms and notations in the final project.	Student demonstrates his/her understanding of ratios/proportions by including one ratio/proportion using the correct terms and notations in the final project.	Student includes at least one ratio but does not use the correct terms and/or notations in the final project. Student does not include a ratio/proportion in the final project.
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	Algebraic Expressions	Student accurately defines and uses multiple variables to write at least two expressions to represent the real-world problem.	Student accurately defines and uses multiple variables to write one expression to represent the real-world problem.	Student writes one expression to represent the real-world problem but does not accurately define and use multiple variables.
	Science Components:	Students will pass all vocabulary tests with a minimum of score of 70%.		
	Microscope	Pass a microscope test with 90% or above.	Pass a microscope test with 80% or above.	Does not pass a microscope test with 80% or above; receives a score of less than 80%.
	Food chain	Construct an illustrated food chain listing/labeling predator and prey.	Construct a food chain listing/labeling predator and prey.	Constructs a food chain but predator and prey are not listed/labeled.
	Adaptation/ animal report	See attached rubric-requirements for an A or B.	See attached rubric-requirements for a C.	See attached rubric-requirements for "failing".
	Social Studies Component Crusades	Passes a written quiz over the Crusades with 75% accuracy or above to show proficiency.		
	ELA Component Children's Book	Finish complete first draft of a children's book. Illustrations are begun. Text is not perfect, but is heading towards a final draft.	First draft is more than half written. Illustrations are sketched out and planned. Text may need a lot of work, but contains sufficient word count.	First draft is less than half finished. No illustrations are planned. Text is insufficient and inadequate.
	Project Implementation (all disciplines)	Goes above and beyond. Always on task and focused on the project. Works well with all group members and helps others in need. Completes tasks in a timely matter.	Puts forth effort. On task when something needs to be done. Contributes to the project.	Didn't put forth sufficient effort. Always off task and causes distractions. Doesn't do anything to contribute to the project.
Unit Objectives	<p><i>I can create a basic story line with a theme.</i></p> <p><i>I can support my opinion with facts and data.</i></p> <p><i>I can define "adaption" give an example of both an animal and plant that has adapted to its environment.</i></p> <p><i>I can represent mathematical equations from a real-world situation.</i></p> <p><i>I can understand and solve an equation as a process of answering a question.</i></p> <p><i>I can solve word problems involving ratios and rates.</i></p> <p><i>I can explain how children made a difference during the Crusades.</i></p> <p><i>I can give examples of different biomes and locate them on a world map.</i></p>			
Strands (main ideas taught in unit)				
<u>ELA</u>	narrative writing (children's book)			
<u>Math</u>	Algebra, ratios, proportions, linear function/equation, inequalities, function rule, function table, order of operation, quadrants			
<u>Science</u>	Microscopes, Adaptations (animals, food chain, biomes)			

<u>Social Studies</u>	History (Middle Ages)			
Vocabulary				
ELA	<p>Connotation- the associated or secondary meaning of a word or expression in addition to its explicit or primary meaning</p> <p>denotation-the explicit or direct meaning or set of meanings of a word or expression, as distinguished from the ideas or meanings associated with it or suggested by it</p> <p>outline-a general sketch, account, or report, indicating only the main features, as of a book, subject, or project</p> <p>evaluate-to judge or determine the significance, worth, or quality of; assess</p> <p>genre- kind, category, or sort, esp of literary or artistic work</p> <p>conflict-discord of action, feeling, or effect; antagonism or opposition, as of interests or principles</p> <p>resolution-a solution, accommodation, or settling of a problem, controversy</p> <p>imagery-figurative or descriptive language in a literary work; the formation of mental images, figures, or likenesses of things, or of such images collectively</p> <p>symbolism-the practice of representing things by <u>symbols</u>; the representation of something in symbolic form or the attribution of symbolic meaning or character to something</p> <p>metaphor-a figure of speech in which a word or phrase is applied to an object or action that it does not literally denote in order to imply a resemblance</p>			
Math	<p>Algebra: a method of calculating using letters and signs to represent numbers.</p> <p>Ratios: a comparison of two numbers by division.</p> <p>Equivalent ratios: two ratios that name the same number.</p> <p>Proportions: an equation stating that two ratios are equal.</p>			
Science	<p>Microscope- an instrument used to magnify an object</p> <p>Cell- the basic unit of structure & function for all living things</p> <p>Stage- a small platform on a microscope where the specimen is mounted</p> <p>Cover slip- a small piece of glass that covers a specimen</p> <p>Slide- a thin glass plate on which specimens are mounted</p> <p>Adaptation- changing the structure or function of an organism by which the organism becomes better fitted to survive in its environment</p> <p>Environment- the surrounding things, conditions, or influences on an organism</p> <p>Biotic factors- a living thing in a community</p> <p>Abiotic factors- nonliving things in a community</p>			
Social Studies	<p>Crusade - Any of the military expeditions undertaken by European Christians in the 11th, 12th, and 13th centuries to recover the Holy Land from the Muslims. Also, a vigorous concerted movement for a cause or against an abuse.</p>			
Key Questions				
	ELA	Math	Science	Social Studies
	<ul style="list-style-type: none"> How do you determine a theme in a work of literature? How do you cite textual evidence to support analysis of what a text says and draw inferences? How are main ideas introduced, illustrated, and elaborated on in a text? How do sentences, 	<ul style="list-style-type: none"> How do we use algebra? What are ratios and proportions and why do we use them? 	<ul style="list-style-type: none"> How did the invention of the microscope change our world? Support your answer with 3 examples. What adaptations do animals and humans make and how has it helped them survive? 	<ul style="list-style-type: none"> How did children make a difference during the Children's Crusades of the Middle Ages?

	<p><i>paragraphs, or chapters fit into the overall structure of a text and contribute to the development of ideas?</i></p> <ul style="list-style-type: none"> • <i>How do you use context to determine or clarify the meaning of words and phrases?</i> • <i>How do you plan, develop, edit and revise to create clear and coherent writing?</i> 			
Hook for Unit	Field trip to Indianapolis <i>International Festival</i> (November)			
Literature Component	Fiction novel- <i>Drums, Girls, and Dangerous Pie</i> Non-fiction- “Malala the Powerful” (Scholastic Scope)			
Writing Closure	Rough Draft of Children’s Book			
Materials Needed for Culminating Event	<p><i>Donations of materials to send to the orphanage in Guatemala</i></p> <p><i>Materials to publish final draft of children’s books (at end of year)</i></p>			
Standards:				
<p><u>ELA</u> Indiana Standards.</p>	<p>6.RL.2.3 Explain how a plot unfolds in a series of episodes as well as how the characters respond or change as the narrative moves toward a resolution.</p> <p>6.RL.3.1 Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a work of literature and contribute to the development of the theme, characterization, setting, or plot.</p> <p>6.RL.4.2 Compare and contrast works of literature in different forms or genres (e.g., <i>stories and poems; historical novels and folktales</i>) in terms of their approaches to similar themes and topics.</p> <p>6.RN.2.1 Cite textual evidence to support analysis of what a text says explicitly as well as inferences drawn from the text.</p> <p>6.RN.4.1 Trace and evaluate the argument and specific claims in a text, distinguishing claims that the author supports with reasons and evidence from claims that are not supported.</p> <p>6.RN.4.2 Integrate information presented in different media or formats (e.g., <i>visually, quantitatively, verbally</i>) to demonstrate a comprehension of a text, issue, or topic, and explain how the media or formats contribute to that understanding of a topic or issue.</p> <p>6.W.3.1 Write arguments in a variety of forms that –</p> <ul style="list-style-type: none"> • Introduce claim(s), using strategies such as textual analysis, comparison/contrast and cause/effect. • Use an organizational structure to group related ideas that support the argument. • Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. • Establish and maintain a consistent style and tone appropriate to purpose and audience. • Use appropriate transitions that enhance the progression of the text and clarify the relationships among claim(s) and reasons, evidence, and analysis. • Provide a concluding statement or section that follows from the argument presented. <p>6.W.4 Apply the writing process to –</p> <ul style="list-style-type: none"> • Plan and develop; draft; revise using appropriate reference materials; rewrite; try a new approach; and edit to produce clear and coherent writing that is clear and coherent, with some guidance and support from peers and adults. • Use technology to interact and collaborate with others to generate, produce, and publish writing. 			

	<p>6.W.5 Conduct short research assignments and tasks to build knowledge about the research process and the topic under study.</p> <ul style="list-style-type: none"> ● Formulate a research question (e.g., <i>In what ways did Madame Walker influence Indiana society?</i>). ● Gather relevant information from multiple sources, and annotate sources. ● Assess the credibility of each source. ● Quote or paraphrase the information and conclusions of others. ● Avoid plagiarism and provide basic bibliographic information for sources. ● Present information, choosing from a variety of formats. <p>6.SL.1 Listen actively and adjust the use of spoken language (e.g., <i>conventions, style, vocabulary</i>) to communicate effectively with a variety of audiences and for different purposes.</p> <p>6.SL.2.2 Elaborate and reflect on ideas under discussion by identifying specific evidence from materials under study and other relevant materials.</p> <p>6.SL.2.3 Follow rules for considerate discussions, set specific goals and deadlines, and define individual roles as needed.</p> <p>6.SL.4.1 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.</p> <p>6.SL.4.2 Create engaging presentations that include multimedia components (e.g., <i>graphics, images, music, sound</i>) and visual displays to clarify information.</p>	
<p><u>Math</u> Indiana Standards.</p>	<p>6.NS.8: Interpret, model, and use ratios to show the relative sizes of two quantities. Describe how a ratio shows the relationship between two quantities. Notations: a/b, a to b, $a:b$.</p> <p>6.NS.9: Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship.</p> <p>6.NS.10: Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tape diagrams, double number line diagrams, or equations).</p> <p>6.AF.3: Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and use arithmetic operations to solve for an unknown in a simple equation.</p> <p>6.AF.4: Understand that solving an equation or inequality is the process of answering the following question: Which values from a specified set make an equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p> <p>6.AF.5: Solve equations of the form $x + p = q$, $x - p = q$, $px = q$, and $x/p = q$ fluently for cases in which p, q and x are all nonnegative rational numbers. Solve word problems using equations of these forms and solve such problems.</p> <p>6.AF.8: Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Use absolute value to find distances between points with the same first coordinate or the same second coordinate.</p> <p>6.AF.9: Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and graph the points on a coordinate plane.</p> <p>6.AF.10: Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express the relationship between the two quantities, solve for an unknown in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables to solve a real-world problem.</p>	
<p><u>Science</u> Indiana Standards.</p>	<p>SCI.6.3.1 2010 Describe specific relationships (i.e., predator and prey, consumer and producer, and parasite and host) between organisms and determine whether these relationships are competitive or mutually beneficial.</p> <p>SCI.6.3.2 2010 Describe how changes caused by organisms in the habitat where they live can be beneficial or detrimental to themselves or to native plants and animals.</p> <p>SCI.6.3.3 2010 Describe how certain biotic and abiotic factors—such as predators, quantity of light and water, range of temperatures and soil composition—can limit the number of organisms an ecosystem can support.</p> <p>CI.6.3.5 2010 Describe how all animals, including humans, meet their energy needs by consuming other organisms, breaking down their structures, and using the materials to grow and function.</p> <p>SCI.6.3.6 2010 Recognize that food provides the energy for the work that cells do and is a source of the molecular building blocks that can be incorporated into a cell's structure or stored for later use.</p>	
<p><u>Social Studies</u> Indiana Standards.</p>	<p>6.1.5 Analyze the diverse points of view and interests of those involved in the Crusades and give examples of the changes brought about by the Crusades. Examples: <i>Increased contact between European and non-European peoples, impact on Jews and Muslims in Europe and the Middle East, changes in technology, and centralization of political and military power</i></p> <p>6.3.1 Demonstrate a broad understanding of the countries and capitals of Europe and the Americas.</p>	

Scientific Adaptations- Animal Project Rubric

You now have your animal of choice and it is time to begin your project. Below you will find the requirements for your project. You will have 3 class days to work on this project. Any additional time needed must be completed at home. If you have questions as we go along, please see me.

DUE DATE IS: DECEMBER

To receive an A you must	To receive a B you must	To receive a C you must	You will fail the project if
Present your report and visual to the class	Present your report and visual to the class	Present your report and visual to the class	Do not have a report and/or do not have a visual
A typed report is turned into teacher after presentation.	Report is turned into teacher after presentation. It must be neat and easy to read	Report is turned into teacher after presentation, but is very sloppy and hard to read.	No report is turned in.
Report must contain the following information: biome where the animal lives, a food chain that the animal would be included in, the animals predators and what is the prey for the animal, adaptations the animal has to survive.	Report must contain all but 1 of the following information: biome where the animal lives, a food chain that the animal would be included in, the animals predators and what is the prey for the animal, adaptations the animal has to survive.	Report must contain all but 2 of the following information: biome where the animal lives, a food chain that the animal would be included in, the animals predators and what is the prey for the animal, adaptations the animal has to survive.	The report does not contain at least 3 of the required pieces of information.
The visual is colorful and easy to see. This may be a model, a poster or presented through a PowerPoint.	The visual is colorful and easy to see. This may be a model, a poster	Visual is small and not in color.	No visual is presented, or it is a stuffed animal.
You speak loudly and clearly, facing the class making eye contact with the audience.	You speak loudly and clearly facing the class	You are hard to understand.	You refuse to speak in front of the class.