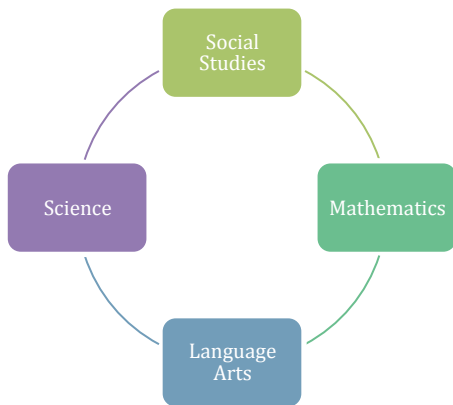


STEM School Chattanooga

10th Grade PBL

Unit Plan 2

Unit 2 : Creative Discovery Museum – Elementary STEM Lessons



Learning Target Topics

Algebra II: PBL team determined targets

Geometry: PBL team determined targets

English II: Develop and strengthen writing and use technology to produce a children’s book

Chemistry: PBL team determined targets

U.S. History: Read and comprehend literary and informational texts and produce clear and coherent writing

Grade Level	10 th Grade	Unit Length	9 Weeks
Unit Overview	Students will meet with personnel from the Creative Discovery Museum (CDM) to develop ideas for elementary STEM lesson plans. Students will also research children’s books that relate to mathematics or scientific concepts in order to find models for creating their own elementary subject specific books. Groups will then choose an elementary lesson plan topic and create a children’s book that aligns with their chosen CDM lesson plan to introduce either a mathematical or scientific concept in an accurate historical context. The children’s book will connect with the larger elementary STEM lesson plan.		
Unit Essential Issue	Problem: <i>Design a K- 5 STEM lesson plan with an accompanying book to explain a mathematical or scientific concept.</i>		
Culminating Events (Kick Off, Midterm Events, and Groups)	<p>Kick Off- October 14th A representative from Creative Discovery Museum will visit all 10th graders to demonstrate a K-5 STEM lesson, as it would be presented to elementary students. STEM School students will actively participate in each component of the CDM lesson plan from the hook at the beginning to rotating in small groups from station to station exploring each concept.</p> <p>Student Teams Students will work in teams of 4-6. Math lesson plan teams must have members that are in the same math subject.</p> <p>CDM Visit – October 21st CDM will visit students to present their lesson plan format and to teach students how to find lesson plan state standards.</p> <p>Book Summaries and Critiques due – October 24th Students will turn in the 5 summaries and critiques of two of their chosen children’s books.</p> <p>Standards and Learning Targets Identified – October 28th Math or science standards as well as learning targets chosen for the book content shall be identified and turned in to content teacher for approval.</p>		

Lesson Standards and Plan Idea Submission – October 30th

Students submit lesson plan standards and plan ideas to CDM representatives.

Draft Day: Books due – November 25th

Students will turn in draft copies of their books and high school adaptations.

CDM Feedback Session – December 2nd

Students will receive feedback on their lesson from CDM representatives.

Presentations – December 4th/5th

Students will present their book and adaptations for high school lessons to their STEM School teachers.


Final Presentations – December 11th

Students will present their lessons plans for final approval to CDM representatives.

Lesson Implementation – January – March 2015

Students will teach their lessons in local elementary schools.

Common Assessment

	<h2 style="margin: 0;">STEM PBL Rubric</h2>		PBL Unit: #2 CDM Student: _____ Date: _____
	Advanced	Proficient	Needs Improvement
	Math Components: Algebra II	Teams with Math Standard focus: <ul style="list-style-type: none"> ✓ Explanation of needed modifications that would adapt lesson plan and storybook to high school mathematics course. Teams with Science Standard focus: <ul style="list-style-type: none"> ✓ Explanation of needed modifications that would adapt the two math stations to high school mathematics course. 	Teams with Math Standard focus: <p><u>Lesson Plan Elements:</u></p> <ul style="list-style-type: none"> ✓ All stations must connect to math standards. ✓ Math standards and learning targets are relevant for chosen grade levels. ✓ The proposed station activities relate clearly to the math standards. <p><u>Book Elements:</u></p> <ul style="list-style-type: none"> ✓ Read and summarize 5 of the available children’s math books. Summaries should include the books use of integration and explanation of mathematics. ✓ Critique the math in two of the books. ✓ Create a children’s book that teaches a mathematical concept from chapters 2, 3, 4, 7, 10, or 11 and allows the reader to understand much more about the topic. ✓ Illustrate the book. Teams with Science Standard focus: <p><u>Lesson Plan Elements:</u></p> <ul style="list-style-type: none"> ✓ Two stations must connect a math standard to a science concept. ✓ Math standards and learning targets are relevant for chosen grade levels. ✓ The proposed station activities relate clearly to the math standards.

	<p>Math Components: Geometry</p>	<p>Teams with Math Standard focus:</p> <ul style="list-style-type: none"> ✓ Explanation of needed modifications that would adapt lesson plan and storybook to high school mathematics course. <p>Teams with Science Standard focus:</p> <ul style="list-style-type: none"> ✓ Explanation of needed modifications that would adapt the two math stations to high school mathematics course. 	<p>Teams with Math Standard focus:</p> <p><u>Lesson Plan Elements:</u></p> <ul style="list-style-type: none"> ✓ All stations must connect to math standards. ✓ Math standards and learning targets are relevant for chosen grade levels. ✓ The proposed station activities relate clearly to the math standards. <p><u>Book Elements:</u></p> <ul style="list-style-type: none"> ✓ Read and summarize 5 of the available children’s math books. Summaries should include the books use of integration and explanation of mathematics. ✓ Critique the math in two of the books. ✓ Create a children’s book that teaches a mathematical concept from chapter 3 and allows the reader to understand much more about the topic. ✓ Illustrate the book. <p>Teams with Science Standard focus:</p> <p><u>Lesson Plan Elements:</u></p> <ul style="list-style-type: none"> ✓ Two stations must connect a math standard to a science concept. ✓ Math standards and learning targets are relevant for chosen grade levels. ✓ The proposed station activities relate clearly to the math standards. 	
	<p>Science Components: Chemistry</p>	<p>Teams with Science Standard focus:</p> <ul style="list-style-type: none"> ✓ Explanation of needed modifications that would adapt lesson plan and storybook to high school science course. <p>Teams with Math Standard focus:</p> <ul style="list-style-type: none"> ✓ Explanation of needed modifications that would adapt the two science stations to high school science course. 	<p>Teams with Science Standard focus:</p> <p><u>Lesson Plan Elements:</u></p> <ul style="list-style-type: none"> ✓ All stations must connect to science standards. ✓ Science standards and learning targets are relevant for chosen grade levels. ✓ The proposed station activities relate clearly to the science standards. <p><u>Book Elements:</u></p> <ul style="list-style-type: none"> ✓ Read and summarize 5 of the available children’s science books. Summaries should include the books use of integration and explanation of science. ✓ Critique the science in two of the books. ✓ Create a children’s book that teaches a scientific concept and allows the reader to understand much more about the topic. ✓ Illustrate the book. <p>Teams with Math Standard focus:</p> <p><u>Lesson Plan Elements:</u></p> <ul style="list-style-type: none"> ✓ Two stations must connect a science standard to a math concept. 	

			<ul style="list-style-type: none"> ✓ Science standards and learning targets are relevant for chosen grade levels. ✓ The proposed station activities relate clearly to the science standards. 	
	<p>Language Arts Components: English II</p>	<p><u>Book Elements:</u></p> <ul style="list-style-type: none"> ✓ Engages readers from intended age range. ✓ Revises draft(s) to improve the flow of the plot, ensure clarity and focus, and ensure learning concepts blend well with the story. ✓ Book has no Conventions of Standard English errors. ✓ Expertly use eBook publishing software such as iBooks Author to create an interactive experience for the reader. ✓ Integrate multimedia elements that enhance understanding and meaning. ✓ Visual rhetoric techniques are expertly used to enhance meaning and reader engagement. ✓ Final product is approved for publication. 	<p><u>Book Elements:</u></p> <ul style="list-style-type: none"> ✓ Accurately written in an appropriate style for intended age range. ✓ Demonstrates evidence of planning and editing. ✓ Have few Conventions of Standard English errors that do not affect meaning. ✓ Use an eBook publishing software such as iBooks Author to create groups selected topic book. ✓ Integrates multimedia elements. ✓ Visual rhetoric techniques are used to enhance meaning and reader engagement. ✓ Read and summarize the 5 chosen children's books. Summaries should include the sentence structure, word choice, and audience. ✓ Critique the science or math pedagogy from at least 2 of 5 summarized children books. 	
	<p>Social Studies Components: U.S. History</p>	<p><u>Book Elements:</u></p> <ul style="list-style-type: none"> ✓ Literary story must contain historically accurate biographies or events that is appropriate for the audience. <p><u>Lesson Plan Elements:</u></p> <ul style="list-style-type: none"> ✓ Lesson plans are written so that when interest is ignited, opportunities for further inquiry are available and is included in the lesson plan. 	<p><u>Book Elements:</u></p> <ul style="list-style-type: none"> ✓ Literary story must contain historically accurate era information that is appropriate for the audience. <p><u>Lesson Plan Elements:</u></p> <ul style="list-style-type: none"> ✓ Presents measurable learning targets that are tied to state standards for the grade level. 	
	<p>Minimum Requirement Components: Must be included to be graded</p>	<p>General Requirements:</p> <ul style="list-style-type: none"> ✓ One children's storybook ✓ Lesson plan includes one station per team member (if you have 6 team members, your lesson plan should include 6 stations) ✓ Lesson plan is in the CDM format ✓ One of the following two: <ul style="list-style-type: none"> ○ Math Focus: Teams should submit summary of five or more math children's books. Summarizes should include the books use of integration and explanation of mathematics and the sentence structure, word choice and audience. ○ Science Focus: Teams should submit summary of five or more science children's books. Summarizes should include the books use of integration and explanation of science and the sentence structure, word choice and audience. <p>English II:</p> <ul style="list-style-type: none"> ✓ MLA formatted works cited page ✓ Three or more sources are included in the works cited page ✓ Children's book contains 250-1200 words 		
<p>Unit Learning Targets</p>	<p>Algebra II:</p> <ul style="list-style-type: none"> • Learning targets to be determined by students based on their chosen content. <p>Geometry:</p> <ul style="list-style-type: none"> • Learning targets to be determined by students based on their chosen content. <p>Chemistry:</p> <ul style="list-style-type: none"> • Learning targets to be determined by students based on their chosen content. 			

	<p>English II:</p> <ul style="list-style-type: none"> I can develop and strengthen my writing by planning, revising, and editing with a focus on purpose and audience. I can use technology to produce, publish, and update my own work, and shared writing projects. <p>History:</p> <ul style="list-style-type: none"> I can read and comprehend complex literary and informational texts independently and proficiently. I can read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. I can write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences. I can produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. 	
Vocabulary	Math: Algebra II	1. TBD by students' chosen content
	Math: Geometry	1. TBD by students' chosen content
	Science: Chemistry	1. TBD by students' chosen content
	Language Arts: English II	<ol style="list-style-type: none"> Audience Conventions Editing Planning Purpose Revising Rewriting
	Social Studies: U.S. History	<ol style="list-style-type: none"> Audience Theme Historiography