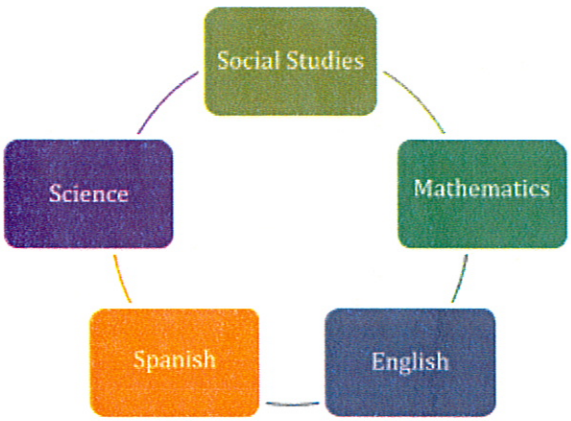
STEM School Chattanooga
10th Grade PBL
Unit 2

Unit 2: Creative Discovery Museum- Elementary STEM Lessons



Learning Target Topics

Algebra II: PBL team determined targets

Geometry: PBL team determined targets

English II: Strengthen writing through planning, revising, and editing. Use technology to produce and publish work.

Chemistry: PBL team determined targets

U.S. History: Introduce and establish claim. Effectively seek and gather information.

Grade Level	10th 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. Groups will choose elementary math **or** science standard(s) and create a lesson plan that details a STEM lesson for the standard(s) used. CDM personnel will assess the lessons for quality. Student teams meeting the standard set by CDM will have the opportunity to implement the lessons at elementary schools with K-5 students in the spring semester.		
Unit Essential Issue	**Problem**: *Design a K-5 STEM lesson plan to explain mathematical or scientific concepts.*		

Kick Off Event	**Kick Off– October 21, 2016** 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, including the hook at the beginning, rotating in small groups from station to station exploring each concept, and a summarizing closing activity. **Student Teams** Students will work in teams of four. *Math lesson plan teams must have members that are in the same math course if they are aiming for a score of AD.* **CDM Visit – October 26, 2016** CDM will visit students to present their lesson plan format and to teach students where to find elementary state standards. **Standards and Submission of Ideas – November 2, 2016** Students will submit their chosen math or science standard(s) and initial plan ideas to CDM representative for approval. **CDM Feedback Session #1– November 16, 2016** Student teams will receive feedback on their lesson from the CDM representative. Student teams meet with CDM representative one at a time. **Introduction Performance - November 16th - 18th** Students will perform a completed draft of their introduction to Mr. Evans and receive feedback before they meet with the CDM representative. **Lesson Plans Due to Mr. Kubisak– December 2, 2016** Students will turn in their lesson plans to Mr. Kubisak. **CDM Feedback Session #2 – December 6, 2016** Student teams will receive feedback on their lesson from CDM representative. Student teams meet with CDM representative one at a time. **Final Presentations – December 13, 2016** Students will present their lessons plans for final approval to CDM representatives. **Lesson Implementation – January – March 2016** Students will teach approved lessons in local elementary schools.

Common Assessment

STEM School Chattanooga

STEM PBL Rubric

PBL Unit: #2- CDM
Student: _____
Date: _____

	Advanced	Proficient	Needs Improvement
Math Components: **Algebra II/Geometry**	Teams with **Math Standard** focus: • A fifth station must be created and included in lesson plans that connects the chosen elementary-level standard to a current STEM School Algebra II or Geometry Learning Target*. • This station must present the high school-level standard in a developmentally appropriate way.	Teams with **Math Standard** focus: Lesson Plan Elements: • Four learning stations must be created and connected to an elementary-level math standard of your choice. • One station must connect the chosen math standard with science. • One station must connect the chosen math standard with technology. • One station must connect the chosen math standard with engineering.	

	*(*For this reason, students wishing to achieve "Advanced" must be in homogenous math groups.)*	• One station must connect the chosen math standard with mathematics. • Math standards and learning targets are relevant for chosen grade levels. • The proposed station activities relate clearly to the math standards.	
Science Components: **Chemistry**	Teams with **Science Standard** focus: • A fifth station must be created and included in lesson plans that connects the chosen elementary-level standard to a current STEM School Chemistry Learning Target. • This station must present the high school-level standard in a developmentally appropriate way.	Teams with **Science Standard** focus: <u>Lesson Plan Elements</u>: • Four learning stations must be created and connected to an elementary-level science standard of your choice. • One station must connect the chosen science standard with science. • One station must connect the chosen science standard with technology. • One station must connect the chosen science standard with engineering. • One station must connect the chosen science standard with mathematics. • Science standards and learning targets are relevant for chosen grade levels. • The proposed station activities relate clearly to the science standards.	
Language Arts Components: **English II**	• Lesson plans must be edited and refined in a way that has the lesson plans publish-ready. • Activities and introductions are written so that interest is ignited and opportunities for further inquiry are present.	• Standards must be presented in a Tennessee state format. • Presents measurable learning goals that are tied to state standards for the grade level. • Lesson has measurable outcomes for each station.	
Social Studies Components: **U.S. History**	• Introduction contains a consistent flow with no sustained pauses. • Introduction should be able to captivate the audience and get the student's excited about the projects and/or goals. • Introduction should use devices to assist the students to remember and achieve the center's objectives.	• Introductions must contain a Hook, Background Information of Centers, and Goals for the Elementary Students. • Introduction should be age appropriate.	
Foreign Language Components: **Spanish**	• When conducting the stations, at least 4 of the 20 Spanish classroom commands should be used appropriately. (Listed by Spanish teacher) • Classroom commands should be reviewed at station before instruction. • Students must choose at least one command from each Level in the vocabulary section.	• Students will create a Spanish word bank containing 8 words that will be used in the stations. (8 words in total, NOT for each station) • Lesson plans must embed Spanish vocabulary. Students must utilize basic Spanish words that directly correlate with the station. • Vocabulary should be age appropriate and must reflect the math or science themes.	

	Minimum Requirement Components: **Must be included to be graded**	General Requirements: • Lesson plan is in the CDM format . ○ https://goo.gl/7zY0Jh • Lesson plan named: Group # Subject-Title of Unit • Grammatically and mechanically sound • Lesson Plans written as instructions for a teacher rather than a script for what the STEM Troupe will do. • Lesson plan includes four stations with one station connecting to each part of STEM. (Science, Technology, Engineering, Mathematics). • Groups will choose either math *or* science standards to focus their lesson plan. • Groups will have a maximum $50 budget for materials. • Introduction should be at least one minute long but concise enough to keep the attention of the age group. • All group members must participate in the introduction. Spanish • Word banks must be signed off by Sra. Engl
Unit Learning Targets		Algebra II: • Learning targets to be determined by students based on their chosen content. Geometry: • Learning targets to be determined by students based on their chosen content. Chemistry: • Learning targets to be determined by students based on their chosen content. English II: • 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. History: • I can introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. • I can gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience

Vocabulary			Spanish translation
	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	1. Audience 2. Conventions 3. Editing 4. Planning 5. Purpose 6. Revising 7. Rewriting	
	Social Studies: U.S. History	1. Audience 2. Theme 3. Hook 4. Thesis 5. Flow	
	Spanish	**Level 1** 1. Sit Down 2. Raise hand 3. What is your name? 4. Good job! 5. How do you say? You say... **Level 2** 6. Let's sing! 7. Boys and girls 8. Repeat please 9. Station number ___ 10. Why? Because.. **Level 3** 11. Group 12. Please 13. Thank you 14. Attention, please 15. Rotate 16. Silence **Level 4** 17. Excuse me 18. Sorry 19. Let's play 20. Listen	**Level 1** 1. Siéntese 2. Levanta la mano 3. ¿Cómo te llamas? 4. Buen trabajo, muy bien 5. ¿Cómo se dice? Se dice... **Level 2** 6. Vamos a cantar 7. Niños y niñas 8. Repita por favor 9. Estación number uno, dos etc.. 10. ¿Por qué? Porque.. **Level 3** 11. Grupo 12. Por favor 13. Gracias 14. Atención por favor 15. Rotación 16. Silencio **Level 4** 17. Con permiso 18. Lo siento/Perdón 19. Vamos a jugar 20. Escuchen