

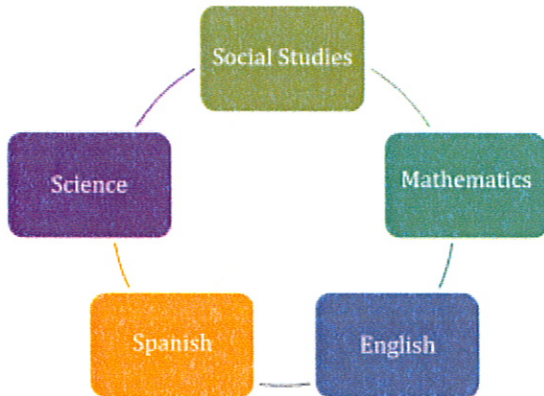
# STEM School Chattanooga

## 10<sup>th</sup> Grade PBL

### Unit 3

### Unit 3: Unum- Swift Playground/Xcode Coding

#### Learning Target Topics



Algebra II: Will vary depending on student choice.




Geometry: Will vary depending on student choice.

English II: Demonstrate command of the conventions of standard English grammar and usage

Chemistry: Demonstrate a clear grasp of Chemistry Unit 1 Learning Targets

U.S. History: Determine central ideas from source documents and evaluate various explanations for historical events

Grade Level	10 <sup>th</sup> Grade	Unit Length	6 Weeks
Unit Overview	<p>Students will use Swift Playground to learn the Swift coding language and varied coding logic principles. Students will have instructional videos to learn the IDE (integrated development environment) Xcode in order to create and build an app for content quizzes. Students will work with identified student coding experts throughout the unit instead of technical expertise coming from the faculty.</p> <p>The unit will conclude with groups participating in a coding challenges competition at the school created by Unum staff and student Swift Playground/Xcode experts. The top groups in the school-based competition will then be invited to compete in a similar coding challenge against Unum employees at Unum's headquarters for viewing by all Unum employees.</p>		
Unit Essential Issue	<p><b>Problem:</b> <i>How do we, as software developers, use Swift Playground and Xcode to develop a fully functioning iOS application?</i></p>		
Kick Off Event	<p><b>Kick Off - January 6</b> Student Coding Professionals will lead all 10th grade students in an activity</p> <p><b>Field Study - January 20</b> Students will travel to Unum's data center in Atlanta to learn about practical applications of the Swift Playground/Xcode coding language and learn about the "cloud".</p>		
Culminating Events	<p><b>Competition - Wednesday February 15</b> Teams will compete against each other at STEM School, completing coding challenges based on what they learned in Swift Playgrounds and Xcode.</p>		

	<p><b>Turn-in day – Friday February 17</b> Swift Playground: Student experts will verify and record when individual students complete Playground 1. App: Teams will submit completed Xcode file via Google Classroom in “10th Grade PBL.”</p> <p><b>Unum Competition – Wednesday March 15</b> The top teams from the STEM coding competition will then compete at Unum in their showcase competition.</p>								
Common Assessment	<p>Students will receive two grades for this PBL: one individual, one group.</p> <p><b>Individual Portion</b> Students will complete Swift Playground 1 &amp; 2 and the Xcode instructional videos. The Swift Playground/Xcode coding PBL individual grade will be assessed as follows:</p> <ul style="list-style-type: none"><li>● BB (below basic): Partial completion of Swift Playground 1</li><li>● PR (proficient): Complete Swift Playground 1</li><li>● AD (advanced): Complete Swift Playground 2</li></ul> <p><b>Group Portion</b> In groups of three, students will work together to write code for each of the core content classes. The attached rubric will be used to assess group PBL performance and grade. The final group PBL grade will be assigned as follows:</p> <ul style="list-style-type: none"><li>● BB: One or more of the content areas do not meet Proficient requirements</li><li>● PR: All content areas are at least at Proficient requirements or better</li><li>● AD: All content areas are at Advanced requirements.</li></ul>								
	<table><tr><td></td><td colspan="2">STEM PBL Rubric</td><td>PBL Unit: <u>#3- Unum</u> Student: _____ Date: _____</td></tr><tr><td></td><td>Advanced</td><td>Proficient</td><td>Needs Improvement</td></tr></table>		STEM PBL Rubric		PBL Unit: <u>#3- Unum</u> Student: _____ Date: _____		Advanced	Proficient	Needs Improvement
		STEM PBL Rubric		PBL Unit: <u>#3- Unum</u> Student: _____ Date: _____					
		Advanced	Proficient	Needs Improvement					
<table><tr><td>Math Components: Algebra II/Geometry</td><td><ul style="list-style-type: none"><li>● Code a quiz for each of the math areas.<ul style="list-style-type: none"><li>○ If answered correctly, the next question is displayed.</li><li>○ If answered incorrectly, an explanation with additional examples is displayed, then returns to the previous question.</li></ul></li><li>● Must have two questions for each math area for a total of six (6) questions.</li></ul></td><td><ul style="list-style-type: none"><li>● Build a quiz app that reviews three math LTs, chosen by the student, that are already in the gradebook.</li><li>● Demonstrate a clear understanding of chosen math LTs.</li></ul></td><td></td></tr></table>	Math Components: Algebra II/Geometry	<ul style="list-style-type: none"><li>● Code a quiz for each of the math areas.<ul style="list-style-type: none"><li>○ If answered correctly, the next question is displayed.</li><li>○ If answered incorrectly, an explanation with additional examples is displayed, then returns to the previous question.</li></ul></li><li>● Must have two questions for each math area for a total of six (6) questions.</li></ul>	<ul style="list-style-type: none"><li>● Build a quiz app that reviews three math LTs, chosen by the student, that are already in the gradebook.</li><li>● Demonstrate a clear understanding of chosen math LTs.</li></ul>						
Math Components: Algebra II/Geometry	<ul style="list-style-type: none"><li>● Code a quiz for each of the math areas.<ul style="list-style-type: none"><li>○ If answered correctly, the next question is displayed.</li><li>○ If answered incorrectly, an explanation with additional examples is displayed, then returns to the previous question.</li></ul></li><li>● Must have two questions for each math area for a total of six (6) questions.</li></ul>	<ul style="list-style-type: none"><li>● Build a quiz app that reviews three math LTs, chosen by the student, that are already in the gradebook.</li><li>● Demonstrate a clear understanding of chosen math LTs.</li></ul>							
<table><tr><td>Science Components: Chemistry</td><td><ul style="list-style-type: none"><li>● Code a quiz for each of the Chemistry areas.<ul style="list-style-type: none"><li>○ If answered correctly, the next question is displayed.</li><li>○ If answered incorrectly, an explanation with additional examples is displayed, then returns to the previous question.</li></ul></li><li>● Must have two questions for each Chemistry area for a total of six (6) questions.</li></ul></td><td><ul style="list-style-type: none"><li>● Build a quiz app that reviews the following Chemistry Learning Targets:<ul style="list-style-type: none"><li>○ Compare and contrast the major models of the atom (i.e., Bohr, Rutherford, and the quantum mechanical model)</li><li>○ Describe the trends found in the periodic table with respect to atomic size, ionization energy, and electronegativity</li></ul></li></ul></td><td></td></tr></table>	Science Components: Chemistry	<ul style="list-style-type: none"><li>● Code a quiz for each of the Chemistry areas.<ul style="list-style-type: none"><li>○ If answered correctly, the next question is displayed.</li><li>○ If answered incorrectly, an explanation with additional examples is displayed, then returns to the previous question.</li></ul></li><li>● Must have two questions for each Chemistry area for a total of six (6) questions.</li></ul>	<ul style="list-style-type: none"><li>● Build a quiz app that reviews the following Chemistry Learning Targets:<ul style="list-style-type: none"><li>○ Compare and contrast the major models of the atom (i.e., Bohr, Rutherford, and the quantum mechanical model)</li><li>○ Describe the trends found in the periodic table with respect to atomic size, ionization energy, and electronegativity</li></ul></li></ul>						
Science Components: Chemistry	<ul style="list-style-type: none"><li>● Code a quiz for each of the Chemistry areas.<ul style="list-style-type: none"><li>○ If answered correctly, the next question is displayed.</li><li>○ If answered incorrectly, an explanation with additional examples is displayed, then returns to the previous question.</li></ul></li><li>● Must have two questions for each Chemistry area for a total of six (6) questions.</li></ul>	<ul style="list-style-type: none"><li>● Build a quiz app that reviews the following Chemistry Learning Targets:<ul style="list-style-type: none"><li>○ Compare and contrast the major models of the atom (i.e., Bohr, Rutherford, and the quantum mechanical model)</li><li>○ Describe the trends found in the periodic table with respect to atomic size, ionization energy, and electronegativity</li></ul></li></ul>							



			<ul style="list-style-type: none"> <li>○ Distinguish among elements, compounds, and mixtures</li> <li>● Demonstrate a clear understanding of the chosen Chemistry Learning Targets.</li> </ul>	
	Language Arts Components: English II	<ul style="list-style-type: none"> <li>● Code a quiz for each of the grammar areas. <ul style="list-style-type: none"> <li>○ If answered correctly, the next question is displayed.</li> <li>○ If answered incorrectly, an explanation with additional examples is displayed, then returns to the previous question.</li> </ul> </li> <li>● Must have two questions for each grammar area for a total of six (6) questions.</li> </ul>	<ul style="list-style-type: none"> <li>● Build a quiz app to review the following grammar topics: <ul style="list-style-type: none"> <li>○ Identifying the difference between a fragment and a complete sentence.</li> <li>○ Understanding comma splices, semi-colons, and colons.</li> <li>○ Understanding subject and verb agreement with intervening phrases.</li> </ul> </li> <li>● Demonstrate understanding of chosen grammar topics.</li> </ul>	
	Social Studies Components: U.S. History	<ul style="list-style-type: none"> <li>● Code a quiz for each of the history areas. <ul style="list-style-type: none"> <li>○ If answered correctly, the next question is displayed.</li> <li>○ If answered incorrectly, an explanation with additional examples is displayed, then returns to the previous question.</li> </ul> </li> <li>● Must have 3 questions each for the broad topics of Pre-WWII, During WWII, and Post-WWII..</li> </ul>	<ul style="list-style-type: none"> <li>● Build a quiz app to review the following history topics: <ul style="list-style-type: none"> <li>○ People of Note during WWII</li> <li>○ Events Pre-, During, and Post-WWII</li> <li>○ Understandings or Ideas of WWII</li> <li>○ Understanding of Advances in Technology used by both the Allied and Axis Powers.</li> </ul> </li> <li>● Displays citation with a sentence or two more to give the student more understanding of the topic.</li> </ul>	
	Foreign Language Components: Spanish	<ul style="list-style-type: none"> <li>● Code a quiz for each of the Spanish grammar areas. <ul style="list-style-type: none"> <li>○ If answered correctly, the next question is displayed.</li> <li>○ If answered incorrectly, an explanation with additional examples is displayed, then returns to the previous question.</li> </ul> </li> <li>● Must have two questions for each Spanish area for a total of six (6) questions.</li> </ul>	<ul style="list-style-type: none"> <li>● Build a quiz app to review the following Spanish topics: <ul style="list-style-type: none"> <li>○ Understanding when and how to use definite and indefinite articles</li> <li>○ Identifying the difference between subject, direct object and indirect object pronouns.</li> <li>○ Understanding how to conjugate AR, ER, IR verbs in the present tense.</li> </ul> </li> <li>● Demonstrate understanding of chosen grammar topics</li> </ul>	
	Minimum Requirement Components: Must be included to be graded	<p>General Requirements:</p> <ul style="list-style-type: none"> <li>● All apps must be built using Xcode.</li> <li>● Finished code must be fully functional to create a fluid start and ending with no syntax errors or crashes.</li> </ul> <p>Spanish:</p> <ul style="list-style-type: none"> <li>● Grammar questions must be signed off by Sra. Engl or Mr. Otero.</li> </ul>		



Unit Learning Targets	<p><i>Algebra 2:</i></p> <ul style="list-style-type: none"> <li>● Will vary depending on student choice.</li> </ul> <p><i>Geometry:</i></p> <ul style="list-style-type: none"> <li>● Will vary depending on student choice.</li> </ul> <p><i>Chemistry:</i></p> <ul style="list-style-type: none"> <li>● I can describe the trends found in the periodic table with respect to atomic size, ionization energy, and electronegativity</li> <li>● I can distinguish among elements, compounds, and mixtures</li> <li>● Compare and contrast the major models of the atom (i.e., Bohr, Rutherford, and the quantum mechanical model)</li> </ul> <p><i>English:</i></p> <ul style="list-style-type: none"> <li>● I can use various types of phrases and clauses to convey meaning and add variety and interest to my writing.</li> <li>● I can use a semicolon to link two or more related independent clauses.</li> <li>● I can use a colon to introduce a list or quotation.</li> </ul> <p><i>History:</i></p> <ul style="list-style-type: none"> <li>● I can evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.</li> </ul> <p><i>Spanish</i></p> <ul style="list-style-type: none"> <li>● I can identify and utilize proper Spanish grammar components in appropriate context.</li> <li>● I can use proper grammar vocabulary to explain how to use basic Spanish grammar rules and functions.</li> </ul>		
Vocabulary	Spanish translation		
	Math: Algebra II	1. Varies depending on LT chosen.	
	Math: Geometry	1. Varies depending on LT chosen.	
	Science: Chemistry	1. Bohr Model 2. Rutherford Model 3. Quantum Mechanical Model 4. Atomic Size 5. Ionization Energy 6. Electronegativity 7. Elements 8. Compounds 9. Homogeneous Mixture 10. Heterogeneous Mixture	
	Language Arts: English II	1. Independent Clause 2. Intervening Phrase 3. Mini-lesson	
	Social Studies: U.S. History	1. Evaluation 2. Reasoning 3. Textual 4. Information 5. IDE (Integrated Development Environment)	

	Spanish	<ol style="list-style-type: none"> <li>1. Grammar</li> <li>2. Definite articles</li> <li>3. Indefinite articles</li> <li>4. Pronouns</li> <li>5. Direct object (pronouns)</li> <li>6. Indirect object (pronouns)</li> <li>7. Conjugations</li> <li>8. Present Tense</li> <li>9. Verbs</li> </ol>	<ol style="list-style-type: none"> <li>1. Gramatica</li> <li>2. Articulos definidos</li> <li>3. Articulos indefinidos</li> <li>4. Pronombres</li> <li>5. Objetos directos</li> <li>6. Objetos indirectos</li> <li>7. Conjugaciones</li> <li>8. Tiempo presente</li> <li>9. Verbos</li> </ol>