**Name:** *Sue Wilson* **Unit Plan Title:** Quarter 3: Human and Society: Agents of Change in Downtown Phoenix

**Course/Grade:** *Modeling our World (Physics 2H, Math 2H – Grade 9)*

**School Setting:** *A Transdisciplinary Problem-Based Learning Plan* **Unit Plan Duration:** *9 weeks*  
**Overview of Unit Plan:** Students will engage in a Model City of Phoenix government (like Model UN) and act as the various government officials and stakeholders as they debate a local hot topic issue (Circle K rezoning on 7th Street and Roosevelt?) At the end of this event, they will receive Requests for Proposal (RFPs) for Repurposing Vacant Lots in the area, with the goal of increasing Downtown visitation and/or population density. Students will engage in the 7-step process to understand the complexity of the problem, compare and contrast urban planning strategies throughout the world, research intended results and unintended consequences of their plans, vision a new future for downtown, and create and submit multi-media proposals. The unit will conclude with a second Model City of Phoenix meeting (Exhibition of Learning) where Proposals are presented and discussed. Throughout the process, we will engage local officials and stakeholders to help students ask questions, gain perspectives, communicate meaningfully, and take action. Approximately 1.5 hours a day will be spent working on this unit, with students rotating through classes/workshops that zoom into related topics the rest of the day. For example, in Math/Physics blocks students will study Forces and Motion and their role in transportation and transportation safety (more gas stations = more cars = less safe = less walkable)

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| **Stage 1 Desired Results** | | |
| ESTABLISHED GOALS  G1: SEFT: Systems Thinking: Identify drivers, indirect drivers, perceived benefits, and problems of an action or event. Propose interventions that consider complex relationships between the elements of the system.  G2: SEFT: Futures Thinking: Imagine the positive and negative consequences of past and present actions on our future. Create a vision of success for short, medium, and long-term progress.  G3: SEFT: Values Thinking: Describe the influence of values in decision making without labeling the values as right or wrong. Consider equity, justice, and social-ecological integrity in intervention design.  G4: SEFT: Strategic Thinking: Develop a short, medium, and long-term plan that achieves the intended vision and favors long-term success over short-term fixes. Include in the plan methods for measuring impact and progress.  G5: SEFT: Interpersonal Thinking: Communicate meaningfully with all stakeholders to represent their voice in intervention design. Incorporate stakeholders in discussions to build support and reduce barriers to implementation of plan.  G6: OXFAM: Knowledge and Understanding: Develop a deeper understanding of different cultures and societies.  G7: OXFAM: Skills: Participate in a relevant political process, arguing rationally and persuasively from an informed position.  G8: OXFAM: Skills: Cooperate and resolve both minor and major conflicts through collaboration, negotiation, mediation, and communication.  G9: OXFAM: Values and Attitudes: Learn and demonstrate a belief that people can improve sustainability and equity by participating in a problem solving and political process.  G10-\_\_ Common Core Math Goals:  G\_\_-G\_\_ NGSS Physical Science Goals:  G\_\_-G\_\_ Common Core ELA Goals:  G\_\_-G\_\_ Art Goals  G\_\_-G\_\_ Health Goals  G\_\_-G\_\_ World Language Goals | ***Transfer*** | |
| *Students will be able to independently use their learning to…*  T1. Understand various levels of and stakeholders in the participatory process.  T2. Develop problem constellations to model the complexity of local and global issues.  T3. Confidence and willingness to contact stakeholders of all levels.  T4. Analyze research and conduct investigations before jumping to solutions.  T5. Respect and value for their role in making sustainable community change. | |
| ***Meaning*** | |
| ENDURING UNDERSTANDINGS  *Students will understand that…*  EU1: Urban planning is the design of cities in order to balance housing, mobility, public space, civic engagement, economic development, and environmental policy. Developers and planners must also consider the values, beliefs, and traditions of the people in that community in their ideas and plans.  EU2: Communication with various stakeholders, both in person and through technology, helps us understand their values, beliefs, ideas, needs, and goals related to city life.  EU3: The values, traditions, and beliefs of an individual or group play a key role in forming opinions on controversial topics. Recognition of, and validation of the values that lead to differing opinions can help open the lines of communication, present opportunities for compromise, and bring new perspective to the brainstorming table.  EU4: Phoenix has a specific governmental structure where decisions are made through neighborhood, village, and city level meetings. Downtown Phoenix could benefit from implementation of urban planning, development, policy ideas, and programs that have been implemented in cities throughout the world.  EU5: City, state, national and global culture, political decisions, economics, events have contributed to urban sprawl. There is a large movement, both grass roots and institutional, to bring people back into the city.  EU6: Change requires interaction between two or more entities. This is true for both physical and social change.  EU7: The 7-step process and political process are two models for taking strategic action to make sustained and equitable changes in our communities.  EU8: Quantitative data and testimonials allow us to measure growth and impact of interventions. We must have baseline data for comparison.  EU9: The built and natural environments shape our behaviors and this culture affects all areas of our health and safety. | ESSENTIAL QUESTIONS  EQ1: What is urban planning? What role do culture and history play in urban planning?  EQ2: How and why do we communicate meaningfully with various stakeholders in our city?  EQ3: How do the values, traditions, beliefs of an individual or group affect their opinion on a controversial matter? How do we recognize and validate other perspectives when opinions differ from ours?  EQ4: How do we describe the social structures and infrastructure in Phoenix? Are there examples of citizen action and urban development in cities around the world that can help us better develop Phoenix?  EQ5: How does our past shape our future? What is the role of the present?  EQ6: What is the relationship between interaction and change?  EQ7: How do we take action to create sustainable and equitable change in our community?  EQ8: How do we evaluate and critique our intervention impacts?  EQ9: How do social and infrastructure environments affect individual, community, and public behaviors, health, and safety? |
| ***Acquisition*** | |
| *Students will know…*  K1: Impacts of population density and foot traffic on urban systems, i.e. transportation needs, infrastructure, economics, etc.  K2: Role of safety and convenience in improving urban systems.  K3: Problem solving and political processes for making sustained and equitable changes in urban environment.  K4: Relationship between forces and motion, both physically and socially.  K5: Importance of data in decision making and communication.  K6: Relationship between social environment, social behaviors, and social health.  K7: Similarities and differences between modeling process, 7-step process, and Engineering Design process.  K8: Awareness of current issues and events in local community. | *Students will be skilled at…*  S1: Asking meaningful questions and developing/conducting quantitative and qualitative investigations to make sense of them.  S2: Collecting baseline data and make predictions using mathematical models. Explicitly identify the assumptions and limits of these models.  S3: Using technology to communicate meaningfully with diverse audiences.  S4: Applying knowledge of forces and motion to discuss transportation safety and efficiency.  S5: Representing perspective of others through role play and presentation.  S6: Conducting surveys and analyze, synthesize, and communicate results in meaningful ways.  S7: Writing a technical proposal that details intervention plan, projected impacts, budget, timeline, etc.  S8: Writing a narrative that details vision for Downtown community.  S9: Applying elements of art to all unit deliverables.  S10: Communicating meaningfully with stakeholders in target and non-target languages. |
| **Stage 2 – Evidence** | | |
| **Evaluative Criteria** | **Assessment Evidence** | |
| ASSESSMENT TOOLS   1. We are working to develop a pre-assessment that attempts to measure global competence, problem solving including Systems, Values, Futures, and Strategic Thinking, and understanding of the participatory process. 2. Assignment Rubric that assesses the degree to which the short speech accurately portrays the values, needs, and beliefs of the assigned stakeholder and makes a persuasive argument for or against the building of the large Circle K station. 3. 6 Facets of Understanding Rubric and Systems Thinking Rubric that assesses the degree to which students make sense of the interconnectivity and complexity of this controversial issue. 4. Assignment Rubric that assesses the degree to which participation in the round table discussion accurately portrays the impacts of the Circle K station on transportation and safety, public health, urban vibrancy, economy, and environment both now and in the future. 5. CER Rubric that assesses the degree to which students used evidence from the Townhall and Roundtable Discussions to come to a decision of whether or not to allow the new Circle K station. 6. Global Competence Rubric, 7-Step Process Rubric (Steps 1-5), Assignment Rubric, and 6 Facets of Understanding Rubric to assess process, thinking, product, and growth. | PERFORMANCE TASK(S):   1. **Townhall Speech from Assigned Stakeholder Perspective:** Write and deliver a 1-2 minute speech that accurately reflects the opinions, beliefs, and stance about the proposed Circle K and the expected impacts of the development on the assigned stakeholder. Assigned roles will include residents, Downtown advocates, Roosevelt Row business owners, City of Phoenix officials, those who work in Downtown Phoenix, urban planners and developers, lot owners, Circle K Corporation, and more. Speeches will be delivered in a City Council meeting format where Freshman teachers play the role of City Council and listen (and assess!) the various presentations. 2. **Problem Constellation and Understanding the Issue Blogs:** Work collaboratively to create a complexity web that identifies the action, perceived benefits, potential problems, drivers, secondary drivers, and stakeholders. Individually, write a blog post titled “The Circle K Issue” that explains the issue to the people of Downtown Phoenix. Write a second blog post titled, “Same issue, Different Country” that describes how the values, traditions, or belief system of another culture are causing controversy over urban development. 3. **Roundtable Discussion from Expert Perspectives:** Use evidence and reasoning to discuss the facts. In groups of 10, students will discuss economic, environmental, safety, crime, health, transportation and urban development impacts of building the Circle K in Downtown Phoenix. Students will use this platform as an opportunity to apply their learning in the various course perspectives to this specific example. All evidence provided in this discussion should come from cited studies. Students will be expected to have three examples in all areas; however, they will be assigned a specific focus area in which they will become an expert. One teacher will take notes in and assess students in each discussion session. Notes will be shared with all students and should be read before casting their votes. 4. **Claim-Evidence-Reasoning (CER) Individual Vote:** Students will cast individual Yes-No votes for whether or not to allow the 12 pump station at 7th Street & Roosevelt after vote writing a blog post titled, “My Vote on Circle K Issue.” In the post, students will use the evidence and reasoning that resonated with them from the Town Hall and Expert sessions to support their recommendation. Blog recommendations do not have to be Yes/No; however, the vote will be a Yes/No vote. 5. **Multi-media Proposal for Alternative Lot Development:** Whether or not students decide to allow the gas station or not, there will be a vacant lot (the current lot, or the old Circle K across the street). Students will apply their learning of the values and culture of the Downtown stakeholders and the environmental, economic, development, safety, and transportation needs of the City to recommend an intervention for this lot that increases population density and/or urban vibrancy of the Downtown area. Students will explore examples of urban development ideas, policy, and programs throughout the world, will get stakeholder input on their brainstormed ideas, and will ultimately pose an intervention idea. Students must predict the change in population density or visitation and identify possible impacts (intended and unintended) of this intervention. Proposals will be presented as 5-10 minute multi-media presentations with 5 minute question and answer sessions following at an end of quarter Exhibition of Learning. Students may work individually or collaboratively, depending on their intervention ideas, but will not be grouped until they propose their ideas. | |
| ASSESSMENT TOOLS  Each blog post will be assessed with an agreed upon rubric that measures the degree to which students applied their understanding of the course concepts and skills to a broader topic. Students will be expected to use global examples from countries throughout the world in each blog post. | OTHER EVIDENCE:  Throughout the quarter, students will write blog posts that describe the impact of class topics on cities throughout the world. For example, in Physics and Math, “Why Speed Limits and Road Widths Matter” after studying Forces and Motion through Transportation Safety Lens. These deliverables will be developed in collaboration with the Freshman Team in the upcoming weeks.  Until then, here are a few examples of how the courses will support the overall theme:  In the study of motion, students will design and conduct investigations that study the average speed and acceleration of cars entering and exiting the 10, on 7th street, the congestion on 7th street and Roosevelt, and the speed of cars entering and exiting Circle K.  In forces, they will mathematically model auto-bicycle and auto-pedestrian accidents at various auto speeds and investigate the Physics of various transportation safety interventions, helmets, crumple zones, seatbelts, texting bans, etc.  Much of the mathematics will be embedded as modeling of real-world data, and the expectation is that students will provide quantitative evidence and mathematical reasoning in Deliverables 1, 3, 4, and 5 above. Also, constant speed and acceleration are two great examples of linear and quadratic functions, respectively. Students will be expected to write a calculator animation program that models an accelerating car colliding with a bicycle traveling at a constant speed. | |
| **Stage 3 – Learning Plan** | | |
| *Summary of Key Learning Events and Instruction*  **Week 1: Who cares about the Circle K station and why?** Monday/Tuesday: Pre-assessment will also serve as introductory engage activity (still being designed, however this is the idea). Students will read the Circle K proposal submitted to City Council and respond with a yes/no/with conditions vote and reasoning for their response. Students will then read the opposition letter by eight Downtown organizations and answer questions regarding participatory process (for Circle K and locals), stakeholders and their values, and potential impacts of building the station. Students will write a narrative about their vision of gas stations in 2030. Lastly, students will conduct an Internet search for articles, blogs, research, and national and international trends related to the issue and post to Edmodo with a paragraph about why they felt this article related. Wednesday: Teachers will guide students to identify key stakeholders, each student will be assigned a stakeholder and they will write unbiased interview questions for stakeholder to get their opinions, reasoning, and stance on the issue. Thursday: Students will go out into the community and/or get on the phone (teachers will help organize this to be successful) to find stakeholders and conduct their interviews. Friday: Students will write a 1-2 minute persuasive speech, from the perspective of the interviewed stakeholder, to be delivered at Monday’s Townhall meeting.  Week 2: **How do we make sense of the complexity of the Circle K station issue?** Monday: Townhall meeting, teachers are City Council (Principal is Mayor!) and each student gives their persuasive speech for or against the zoning of the Circle K station. Students are expected to take notes during other speeches and to assess three of their peers. Tuesday/Wednesday: Teachers will guide students to develop problem constellations around the action Circle K will build a 12 pump gas station at 7th Street & Roosevelt. These are complexity webs that identify perceived benefits, potential consequences, drivers, secondary drivers, root causes, and stakeholders (at every level). Students will use published research, articles, and previous stakeholder interviews to quantify web where possible. Thursday: Students will create blogs and begin writing post titled, “The Circle K Issue”. Friday: Students will research an issue (many ideas will be provided, but they can also find their own) in another country where values and traditions have conflicted with urban and economic development, for example building subways somewhere like Athens or Rome where archeological goldmines could hinder development. What is important to preserve, what can be sacrificed, and who makes these decisions in any metropolitan area? Or, what happens in cities where its inhabitants need access to land to grow food?  Or what role does economics/poverty/wealth play? (compare Saudi Arabia with India)? Or, what role do superstitions (fairy trees in Ireland) and/or past history play (the wall in Berlin)? What if the city is on a fault line? Or doesn’t naturally have much access to water? Students will begin blog posts titled “Same Issue, Different Country”. Both blog posts are due Wednesday of Week 3.  Week 3: **What impacts do various experts think the Circle K will have on society?** Monday: No school MLK Holiday Tuesday/Wednesday/Thursday: Guest speakers that represent Circle K, Local Neighborhood Associations, City Government, Researchers (study on crime at convenience stores), environmentalists, economists, transportation planners, public health officials, and city developers. Students will tweet highlights from the discussions to the rest of the Freshman students. Friday: Students will organize their thoughts (graphic organizer) for Monday Roundtable Discussions. Students will be required to have three examples to share from each perspective, but will be an expert in an assigned focus area. Guest presenters from the week will be asked to share resources (articles, published reports, manuals, etc) that give further insight into their focus area and its ties to the Circle K issue. Student experts will be required to read this report and add the contents to their repertoire.  Week 4: Monday: **What is my stance on the Circle K issue and why?** Groups of 10 students each (one or more from each expert focus area) will engage in a Roundtable Discussion forum. Teachers will act as facilitators and note-takers while students engage in rich discussion about the positive and negative impacts of the proposed Circle K site. Information presented in this session should be solely based on fact (from cited sources or expert presenters) not opinions and values of the stakeholders. Notes/Highlights from each session will be shared out to the rest of the Freshman class on Edmodo and all are expected to read and comment. Tuesday: Students will write a Claim-Evidence-Reasoning piece from their own perspective where they support or oppose the zoning of the Circle K station. Wednesday: Finish CER piece, calculate Yes/No student vote. Thursday: Student groups of 10, different groups, role play City Council meeting to discuss and rule on Circle K station. Decisions can be Yes vote, No vote, or Yes with conditions votes. Groups will share out their decisions in CER format. Friday: Compare and contrast group decisions with each other and with the actual decision of the City of Phoenix (assuming they actually vote on this sometime soon and quit postponing weekly! FYI: the current vote is about giving a liquor license to Circle K within close proximity to residential area, opponents think Circle K will decide not to build if they do not get expanded liquor license so they are fighting this very hard.) If the topic has not yet been decided, students will email their CER pieces to their local legislators. If it is decided, we will work to have City Councilpersons come in to class to discuss their reasoning for voting the way they did.  Week 5: **What root causes should we address with our lot development plan?** (If no vote, then it is still a vacant lot that needs developing, if yes vote, the Circle K across the street will be vacant and that lot will need to be developed) Students will receive a Request For Proposal for ideas to develop the vacant lot (we will work with Roosevelt Row and City of Phoenix to write this RFP to make it realistic.) Students will be tasked with proposing an intervention/plan for the lot that increases Downtown population density and/or increases the urban vibrancy of Downtown Phoenix. Whether people agree with Circle K station or not, it is fair to say that developers did not consider the many needs of the Downtown area before proposing the station. Monday thru Wednesday, students will identify a problem related to the vacant lot, identify causes and impacts of this problem, unpack the causes using the 5 Why’s Protocol and then use their answers to identify root causes of the identified problem. On Thursday, students will write a narrative that illustrates their vision of 7th Street and Roosevelt in 2030. On Friday, students will participate in a gallery walk to share their process, work, and the root causes they have decided to address, as well as their 2030 vision of Downtown Phoenix.  Week 6: **How can we develop the empty lot? How can we evaluate our intervention ideas?** Students will spend Monday, Tuesday, and Wednesday researching urban development ideas, plans, policies, and programs that address their identified root cause that have been or are being implemented in cities throughout the world. Thursday and Friday, students will use their learning from the Circle K station issue discussions to develop a quantitative system and criteria for evaluating potential lot development ideas. By Sunday, students will submit (to Edmodo) a list of potential intervention ideas (both simple and crazy!) and their criteria for evaluation.  Week 7: **What are the intended and unintended consequences of our intervention idea?** Monday: no school. Tuesday, students will work in pairs to use their criteria to evaluate potential intervention ideas in order to determine the intervention that best addresses their root cause and provides a path to their 2030 vision. Wednesday, students will write short statements to describe their intervention idea and the root cause it addresses in the middle of butcher paper. Students will rotate through a number of proposals and identify stakeholders, perceived benefits, and potential problems associated with this plan. Thursday and Friday, students will create problem constellations that identify drivers, secondary drivers, perceived benefits, potential problems, and stakeholders for their plan and contact three stakeholders (different categories) to get feedback on their plan.  Week 8: **What are the costs/benefits of this plan?** Monday, students will take their intervention idea through the SCAMPER process (a brainstorming protocol that encourages divergent thinking, and then refilter through their criteria to reconverge on an intervention idea. Tuesday thru Thursday, students will develop cost (financial and impacts) and benefit (economic and impact) estimates and methods/potential methods for estimating/measuring these numbers. Friday, students will begin to answer the questions addressed in the RFP, including strategies for garnering support for this intervention from stakeholders. Throughout the week, community developers, planners, and business people will work with students to ask questions and pose considerations for their plans.  Week 9: **How do we best communicate our plans to stakeholders?** Students will spend the week answering RFP questions in detail and then creating a multi-media presentation that addresses the RFP requirements and meaningfully communicates the vision and plan to stakeholders. Time will be given daily and opportunities for feedback and help with technology will exist daily.  Week 10: **How do we make our plans a reality?** Monday, students will share their presentations with a partner or another group and follow a protocol for giving constructive criticism. They will then have time for final touches and changes based on feedback. Tuesday, students will share their proposals in mini-City Council meetings (12-15 presentations each). Students will have 5-10 minutes to share presentation and then 5 minutes for Q&A sessions and feedback. City Councils will consist of teachers, administrators, upperclassman, parents (one parent is the former Mayor of Phoenix, but we don’t tell the other students so the student can maintain his identity and not become the Mayor’s kid), urban planners and developers, local advocates, business owners, City officials, etc. Students will evaluate each presentation in their City Council meeting. Wednesday, students will write Self Reflection and Assessment (with guided questions) about their participation, progress, and performance regarding global competence, participatory process, and problem-solving process Thursday, Freshmen will meet with Seniors to discuss Senior Studio projects and ways that they have, can, and will take action in their communities. Freshmen will make an action plan of ways they can improve their communities now and in the future. | | |