21st Century Learning Multidisciplinary Unit

Integrating Science, Social Studies, Health, Language Arts, & Visual Arts

Unit Title - City of the Future

Grade Level - 8th grade (could be adapted for 7 – 11)

Time: Approximately 20 - 22 days of single block periods (or 10 - 11 days of double block periods)

Big Idea

Humans can use observation, critical thinking skills and collaborative social skills to recognize and solve global problems and plan for the future,

Power Standard

The student will demonstrate ethical behavior and work responsibly and collaboratively with others to accomplish both individual and team goals. The student will become a more critical thinker and problem solver and use both content knowledge and technology tools to solve problems and make decisions related to classroom assignments that simulate real world scenarios.

Unit Scenario Overview

The year is 2020 and cities all around the world have major environmental and economic problems. Many citizens feel they have no say in decisions affecting the quality of their lives. Student teams will assume the roles of various scientists and work collaboratively to conduct research and develop an ecologically balanced model for a 21st Century community. They will choose a location, determine a plan to sustain all essentials necessary for survival, outline a government system for making decisions, maintaining order and distributing resources, and decide what attractions and services to offer in the society. Each community development team will create their final design on a computer using Google SketchUp and prepare a creative presentation with visuals describing life in their community to entice prospective residents (their classmates and teacher) to settle there. (G.R.A.S.P.S.)

Lessons – Link to Lesson Plan Index

Critical Thinking Skills

Marzano's Dimensions of Learning:
(http://www.kurwongbss.qld.edu.au/thinking/Dimensions/dimensions.htm)

- Acquisition and Integration of Knowledge
- Extension and Refinement of Knowledge
- Meaningful Use of Knowledge
- Productive Habits of Mind

Costa and Kallick's Habits of Mind:
(http://habitsofmind.org/what_are_the_habits_of_mind.htm)

- Persisting
- Listening to Others with Understanding and Empathy
- Questioning and Posing Problems
- Applying Past Knowledge to New Situations
- Thinking and Communicating with Clarity and Precision
- Creating, Imagining, and Innovating
- Taking Responsible Risks

Finding Humor
Thinking Independently
Learning Continuously

Standards and Objectives for Unit

Link to Content Standards and Objectives for 8th Grade

21st Century Skills for 5th – 8th Grade

West Virginia Standards for 21st Century Learning for Grades 5 - 8:

Standard 1 - Information and Communication Skills

21C.S.5-8.1 - The student will access, analyze, manage, integrate, evaluate, and create information in a variety of forms using appropriate technology skills and communicate that information in an appropriate oral, written, or multimedia format.

(learning skills):

21C.O.5-8.1.LS1 - Student, when presented with a problem, identifies the information needed, uses text, people, online databases and search engines to filter relevant information efficiently, analyzes information for biases, synthesizes information gathered and creates an effective and efficient response to the problem

21C.O.5-8.1.LS3 - Student presents thoughts, ideas, and conceptual understanding efficiently, accurately and in a compelling manner and enhances the oral or written presentation through the use of technology.

(technology tools):

21C.O.5-8.1.TT10 - Student uses Internet browsers, various search engines, book marking features, and advanced search techniques to gather information; student evaluates the information for validity, bias, appropriateness, content and usefulness.

Standard 2 – Thinking and Reasoning Skills

21C.S.5.8.2 - The student will demonstrate the ability to explore and develop new ideas, to intentionally apply sound reasoning processes and to frame, analyze and solve complex problems using appropriate technology tools.

(learning skills):

21C.O.5-8.2.LS1 - Student engages in a critical thinking process that supports synthesis and conducts evaluations by applying comprehensive criteria.

21C.O.5-8.2.LS3 - Student engages in a problem solving process that divides complex problems into simple parts in order to devise solutions.

21C.O.5-8.2.LS4 - Student creates thoughtful ideas and solutions and takes risks as he/she works toward goal despite mistakes. Student begins to consistently think of all the possibilities and diverges to become more expansive with his/her thoughts/ideas that lead to the creation of original products.

(technology tools):

21C.O.5-8.2.TT3 - Student uses multiple technology tools for gathering information in order to solve problems, make informed decisions, and present and justify the solutions.

21C.O.5-8.2.TT4 - Student formulates a plan and uses technology tools and multiple media sources to compare and analyze information

Standard 3 – Personal and Workspace Skills

21C.S.5.8.3 - The student will exhibit leadership, ethical behavior, respect for others; accept responsibility for personal actions considering the impact on others; take the initiative to plan and execute tasks; and interact productively as a member of a group.

(learning skills):

21C.O.5-8.3.LS1 - Student manages emotions and behaviors, engages in collaborative work assignments requiring compromise, and demonstrates flexibility by assuming different roles and responsibilities within various team structures.

21C.O.5-8.3.LS2 - Student is flexible in approach to solving problems and completing tasks, considers alternative methods, solutions and perspectives, abandons strategies that do not work, and reallocates time and resources as priorities change.

21C.O.5-8.3.LS3 - Student sets challenging goals and strategically plans to reach those goals, monitors performance and adjusts effort and strategies, seeks assistance when needed, and demonstrates focused commitment to reaching the established goals.

(technology tools):

21C.O.5-8.3.TT2 - Student conducts online research and evaluates the accuracy, relevance, and appropriateness of electronic information sources

21C.O.5-8.3.TT3 - Student analyzes current information technologies and the effect these technologies have on the workplace and society.

Essential Question - How can man achieve perfection?

Unit Questions:

- What factors are necessary in a 21st Century community and what factors are merely desirable?
- How do people learn to solve problems?
- How far should government go in making decisions for the common good of a society?
- How can a community balance their demand for energy with their need to protect the environment?
- What does an ideal community look like?

Enduring Understandings

Global man must constantly struggle to balance his selfish personal wants and desires with his rational and logical understanding of what is best for planet earth and for mankind as a whole.

Know

Students will know …

- a successful 21st Century community depends on many different factors and cannot be totally self-sufficient.
- finding potential solutions to problems requires investigating facts, analyzing trends, thinking critically, and drawing conclusions based on knowledge and experience.
- reaching a consensus requires access to accurate information, open dialog in an atmosphere of mutual respect, and cooperation to reach common goals.
- people living in communities must be willing to collaborate, compromise, and sacrifice for the good of society.
- protecting the global environment involves reducing energy consumption and finding energy sources that do not deplete natural resources and do not pollute.
- implementing change requires education to convince people of the need for change and the benefits that will be obtained from the plan being proposed.

Do

Students will be able to…

- recognize the factors that people want in communities and choose the ones that will make life more pleasant and beneficial to the residents.
- devise group problem solving strategies to reach consensus on group decisions.
- determine the need for laws and decide how a government should organize and operate to ensure the safety, health, and active participation of all citizens.
- research the pros and cons of nuclear power plants, compare and contrast them with other energy sources, and make a recommendation about whether or not to use nuclear energy.
- use technology to gather and analyze ideas to design ecologically balanced communities for the 21st Century
- utilize technology to make models of community plans.
- create an oral and visual presentation to explain the features and benefits of a planned community.

Assessments/Rubrics

Pre-Project Assessments -

1. Questioning strategies, a Think-Pair-Share pre-assessment will be used to probe students' prior knowledge and understanding of communities.
2. Following introduction of background information, students will write an opinion paragraph describing what they would look for in choosing whether to move to a community or not.
3. Following an Intel Visual Ranking thinking exercise, students will devise a method for reaching group consensus about the job assignments for the project.

Embedded Project Assessments –

4. Daily Work Journals (preferably electronic on a class website blog) – descriptions of tasks performed, research notes, responses to guiding questions, reflections to class activities, etc. – use Rubric for Work Journals for self and teacher assessment
5. Group Dynamics – interactions of teamwork such as time management, focus, decision making and task completion – use Rubric for Group Dynamics for individual's private and teacher assessment
6. Project Guidelines and Group Duty Schedule with guiding questions, checklists, and task assignment specifications.
7. Following an Intel Seeing Reason thinking exercise, students will write a Letter to a Public Official (FATP)
8. Following an Intel Showing Evidence thinking exercise, students will do a class exercise called "Stand Up for Your Beliefs" and debate the issue to help make a group decision and then record notes about it.
9. Teacher conferences with each group and journal monitoring during the course of the project.

Post-Project Assessments -

10. The final projects will include computer generated model displays, oral presentations, and with video and audio components that will be both peer reviewed and assessed by the teacher using Rubric for an Oral Presentation and Rubric for Design Model
11. After all project presentations are completed the students will write a Final 3-2-1 Reflection about their experience and their thoughts about what people in the real world want in communities.

Class Management/Grouping

Careful thought should be given to the make-up of the groups to ensure that they will be able to work well together and have all the necessary skills to do the lesson requirements as an interdependent team. There should be a mix of talents and interests within each group and a measure of balance between the overall abilities of the different groups. The ideal number of group members is five since there are five scientist roles, but more can be included if one or more of the project roles are shared by pairs of students. Sharing roles might be an accommodation made for Resource Students or English Language Learners. It may also be possible to have fewer members in a group if one student can do two jobs or if the whole group works together to fulfill the social scientist's role.

> *Read about how to purposefully group students in "Homogeneous or heterogeneous groups?" (http://www.wcer.wisc.edu/nise/cl1/CL/moreinfo/MI3I.htm) or do random grouping. There is also a strategy known as the Jigsaw Technique (http://www.jigsaw.org/steps.htm) to help students utilize limited resources to become "experts" and then share the information to teach others about what they have learned.*

Strategies, Materials & Resources

Multiple Instructional Strategies for Engaged Learning:

_X_ Cooperative Learning	_X_ Feedback	_X_ Modeling
_X_ Graphic Organizers	_X_ Questioning	_X_ Recognition
_X_ Managing Technology	_X_ Peer tutoring	_X_ Subject integration
_X_ Differentiated Instruction	_X_ Hands-on Activities	_X_ G.R.A.S.P.S. Project Guidelines
_X_ Real World Simulation		

Accommodations for Resource Students and English Language Learners:

_X_ Extra Time/Extra Help	_X_ Peer Assistance	_X_ Podcast Audio Directions
_X_ Oral Assessments	_X_ Task Checklists/Duty Schedule	
_X_ "Frontloading" Content Background/Vocabulary	_X_ Word Processing/Spellcheck	

Accommodations for Gifted Students:

_X_ Open-Ended Questions	_X_ Built-In Individual Enhancement/Enrichment Research Options

Materials/Equipment:

_X_ Computers with Internet	_?_ Textbooks (Optional)	_X_ DVD/ VCR (Optional)
_X_ Worksheets	_X_ Video Cam/Software	_X_ Interactive Whiteboard (Optional)
_X_ Data Projector	_X_ Audio Recorder/Software	_X_ Design Software (Online)
_X_ Map Software (Online)	_X_ Word Processing Software	_X_ Presentation Software (Optional
_X_ USB Flash Drive(s) for digital files	_X_ General Art Supplies	_X_ Image Editing Software (Optional)

Internet Resources:

Link to Technology Resources and Preparation

Lesson Plans

Lesson Index: *(Click to title to open each Lesson Plan)*

- **Lesson 1 – Citizen's Checklist (Introduction & Pre-Assessment)**
- **Lesson 2 – Can you create a model community? (Background & Project Introduction)**
- **Lesson 3 – What do you want in a community? (Intel Thinking Tools - Visual Ranking Activity)**
- **Lesson 4 – Group Problem Solving & Project Challenge**
  - Student Work Sessions 1 - 3 – according to Project Guidelines & Group Duty Schedule
- **Lesson 5 – Do we need laws? (Intel Thinking Tools – Seeing Reason Activity)**
  - Student Work Sessions 4 - 5 – according to Project Guidelines & Group Duty Schedule
- **Lesson 6 – Power It Up! (Intel Thinking Tools – Showing Evidence Activity)**
  - Student Work Sessions 6 – 10 according to Project Guidelines & Group Duty Schedule
- **Lesson 7 – Finalizing the Design – Work Sessions 11 - 13**
- **Lesson 8 -- Group Presentations & Final Assessments *(following completion of project work)***