Creating Solutions for Bad Situations

Sandra Ramsey

Introduction

During my sophomore year at Johnson C Smith University, I became really passionate about doing my part to try to find solutions to the problems that our planet Earth was facing. I became passionate about this cause due to my Ecology professor, Dr J. Fail. During our five hour lab we would for the most part go out into the community for excursions to sites such as Allen Steam Plant (Coal Fired Power Plant), Cargill Oil Refinery, and the Sewage Treatment Planet. Through these trips and his lectures I began to really learn about human impact on Earth and the consequences of our impact on the environment.

Dr. Fail never allowed his students to turn in anything on a fresh sheet of paper unless we were using both sides. He also had a bike that he rode from his home near downtown Charlotte, NC to Johnson C. Smith University (outskirts of downtown Charlotte, NC). Dr. Fail always posed ecological questions for us to brainstorm during every class and expected us to come up with answers and solutions to the problems that he posed. This is where I developed my love for the planet and ecology including environmental problems. From my experiences in Dr. Fail's class I really wanted to give back to my community and work with kids and I found that I would do that by going to my old high school and teaching.

I teach at West Mecklenburg Senior High School in Charlotte, North Carolina in the Charlotte-Mecklenburg School district. CMS is the largest urban school district in North Carolina. West Mecklenburg High School has a student population of about 2,200 students of which most are low income. At West Mecklenburg High School our mission is to "provide a supportive and academically enriched environment to prepare all students for completion of high school requirements and graduation and life after high school. To provide a challenging curriculum that promotes intellectual growth and options for post secondary education."

I am currently teaching freshmen in the Freshmen Academy at West Mecklenburg High School. I currently teach standard Earth/ Environmental Science for 3 periods per day for 90 minutes. I have noticed when students come to me they really don't care about their environments and how those environments are kept up.

My Curriculum Unit plan will benefit my students by allowing them to participate in a variety of unique and rigorous activities that will permit them to think critically and devise solutions to problems that they see on a daily basis, such as excessive littering, air pollution, and waste. These problems can be experienced by everyone; it has no particular race, age, neighborhood, or school. My students have shown an interest in some of these problems by wanting to recycle rather than throw away certain trash items. They also use the fronts and backs of their paper in order to not be wasteful. This unit plan and its activities will allow for a great deal of

differentiation in the activities and the level of rigor that will be introduced in this unit. This curriculum unit should take my class about 7 days according to the Charlotte-Mecklenburg Schools pacing guide for Earth and Environmental Science. Some topics will also be taught in other sections of the Earth and Environmental Science curriculum. In other words this unit will be taught ongoing throughout the year.

Background

According to the Environmental Protection Agency, "sustainability calls for policies and strategies that meet society's present needs without compromising the ability of future generations to meet their own needs."1 Many people believe that sustainability and sustainable practices are the key to human survival on earth.

As previously stated this curriculum unit will address the need for developing solutions to problems made from advanced technology, overpopulation, and pollution among other ecological issues. These problems should be addressed because it is going to be our children and our children's children who are going to be responsible to fix these problems that we have caused.

The problems previously stated are seen all over the world, on every continent. This unit will focus on some solutions to these problems through the development of a sustainable city. According to Lester Brown, "the evolution of modern cities was tied to advances in transport, initially for ships and trains. But it was the internal combustion engine combined with cheap oil that provided mobility for people and freight that fueled the phenomenal urban growth of the twentieth century."2

We know that cities today depend on food, water, energy, and other raw materials to be brought in by either by ships, trucks, or trains. These are problems of cities that are not sustainable. In this curriculum unit the main focus will detail the workings of cities that are made for humans and not for cars.

One such city that had to redevelop due to overcrowding is Curitiba located in Brazil. In 1968 the leading architect Jamie Lerner created the city's first urban planning department which helped to redevelop the city. From the 1970's until now the city has done a lot to improve the city and city living- from pedestrian-only streets, development of "green areas," expanded transit systems and added cultural sites.3

Another such city that is developing to be better for humans is Bogotá, Colombia under the leadership of Enrique Peñalosa from 1998- 2001, he "banned the parking of cars on sidewalks, created or renovated 1,120 parks, introduced a highly successful bus-based rapid transit (BRT) system, built hundreds of kilometers of bicycle paths and pedestrian streets, reduced rush hour traffic by 40 percent, planted 100,000 trees, and involved local citizens directly in the improvement of their neighborhoods. In doing this, he created a sense of civic pride among the city's 8 million residents."2

Both of these South American cities are great examples of how cities can be planned for their inhabitants versus being planned around the automobiles. Students should learn about these and other cities that have made an effort to revamp the city for a better living environment for their population of people. With this background students should be able to design their own city that they would like to live in based on some of the things they will learn from their background research.

Rationale

As I was planning this unit I wanted to do something that would allow my students to show their creativity, allow them to work in several collaborative groups, allow for inquiry, and last but not least allow my students to have different levels of rigor (differentiated instruction). I also wanted a unit that would be taught in a somewhat hands on way. Since I have such a diverse population of students, not only ethnically but intellectually, I believe that all of my students along with their different types of learning styles will be addressed.

In addition to wanting to address the different learning style and abilities in my classroom I also designed this unit to meet one of the standards in teaching for the new teacher evaluation. In my class I would like to work on Standard IV which states that the teacher "facilitates learning for their students." I would like to help my students develop critical thinking and problem solving skills. These skills will help my students as they move on to different classes and it should help them to achieve higher scores on standardized tests that they will have throughout their high school and college careers.

Students coming into high school for the most part have a decent background in basic science. They should have been taught several topics from "Matter" to "Plants." Once most students get to high school they are placed in Earth and Environmental Science. Earth Science focuses on four major subjects: Geology, Oceanography, Meteorology, and Astronomy. Students are introduced to the processes that work together to keep Earth functioning, the resources that Earth provides for us and the processes that allow us to have these resources. Students also learn about the formation of the Earth and the other planets in the solar system, and the ultimate source of energy and in the solar system. Environmental Science simply studies the environment and the impact of humans on it. Students get a well-rounded view of Earth and its processes and the impact of humans on Earth.

This curriculum unit is designed to be taught in a high school setting in either of the following classes: Earth/ Environmental Science, Biology, or Advanced Placement (AP) Environmental Science, although the unit can be altered to fit any targeted audience. In order for your student to be successful with this curriculum unit they must first be taught topics in Ecology. Students should already understand the interrelationships among organisms, populations, communities and ecosystems including carrying capacity and biotic and abiotoic factors in the ecosystem and finally students should also be able to explain the flow of energy and what an ecosystem is from a beginner's perspective. This should equip your students with the background information that they need in order to evaluate and analyze some of the problems that Earth faces as the human populations grows and we continue to overuse resources and pollute the earth.

The Objectives that I would like my students to master in the curriculum unit are the following:

- Identify and evaluate a range of possible solutions to Earth and environmental issues at the local, national, and global levels.
- Assess human population and its impacts on local ecosystems and global environments.
- Investigate and analyze environmental issues and solutions for North Carolina's river basins, wetlands, and tidal environment.
- Analyze global atmospheric changes including changes in CO2, CH4, and stratospheric O3 and the consequences of these changes.
- Assess human population and it impact on local ecosystems and global environments.

These objectives were chosen because they are part of the North Carolina Standard Course of Study.

Studying these topics will allow students to recognize and analyze their role and society's role in some of the things that go on around the world. Students will be able to find alternate sources of energy for countries depending upon their natural resources and the levels of pollution they contribute to the world. Ultimately I would like for my students to become more conscious of their actions and become part of the solutions to the problems that we are facing as the human population continues to grow out of control.

Strategies

This year in the Freshmen Academy at West Mecklenburg High we are focusing on how our students learn and tracking our students test scores (data driven instruction) in order to help them learn better. At the very beginning of the school year all students in the Freshmen Academy were given a Learning Style survey in homeroom, and the homeroom teacher was to enter in the information. The data was then compiled by our Dean of Students. All teachers then placed the data into a spread sheet and from there we made a pie chart of the different leaning styles in all of our class periods. Because of our focus at West Mecklenburg, I will be teaching through a number of strategies geared to help the students that are currently in my classes. Students will not only get reading and writing assignments but they will be given assignments according to how they learn best. Students will be grouped according to their learning style and given assignments that will allow them to create a product that they are able to learn from and teach from.

In addition to the learning style inventory I will be using Advancement via Individual Determination (AVID) strategies. We at West Mecklenburg have been using AVID in all the classes for several years. AVID is a program that prepares students for higher level thinking and promotes high rigor in the classroom. Students will use several AVID strategies from Cornell note taking to Socratic seminars; this allows the students to scaffold and build up their knowledge of sustainability and sustain able development. In addition to the students completing the student AVID strategies I will incorporate WICR (Writing, Inquiry, Collaboration, and Reading) in all my lessons.

Lastly, I will use data to drive my unit plan teaching. Students will be given a pre- and post-lesson test to be placed in a data tracker to track their learning. This type of pre- and post- testing has helped the teachers at West Mecklenburg High School drive their teaching, where we know what objectives or parts of objectives students are struggling with. The students that score high (above 80 percent) on the pre-test will be able to start their hands on a project to be presented in some digital form, either a PowerPoint presentation, an Animoto, or flip chart for Promethean ActivBoard. This allows the students with no background of the content to be taught at a beginner's level and allows for the students that understand the content to be taken to another level of understanding of the content. Students are not only evaluated summative fashion but they are evaluated formatively through several different methods such as parallel assessments, concept maps, chain notes, quick writes, and a host of other types of assessments.

These and many other strategies will be used in my classroom throughout the teaching of this curriculum unit. I do plan to also use a lot of technology for this curriculum unit in order for my students to actually see all the problems that we have caused, and for them to see some of the things that we are doing and creating to help the environment. Students will also be doing research on the computer for some of their projects.

Unit Plan (Lessons are based on a 90 minute class session)

Day 1

Students will come into class and complete a K-W-L (Know-Want to Know-Learned) chart on Sustainability for a warm up activity. This will be a great way to formatively assess your students on their knowledge of sustainability and address any misconceptions they might have on the subject.

Students will watch the animated movie "The Lorax" by Dr Seuss. The students will watch the movie and answer the questions for the film (See Appendix 3). Students should be given the opportunity to watch the entire film uninterrupted; this will take about an hour. Once the film is complete students should be able to discuss the things they viewed in the film, including some solutions to any problems they saw in the film.

Day 2

Students should have a warm up that reviews the Lorax. The students will then take guided Cornell notes on the history of humans on earth, through this students will be able to investigate and analyze why human population boomed during the industrial revolution. Once the human societies have been discussed, the students will build a class concept map through class discussion that will identify the problems associated with the increase in the human population. Students will then be given their Ecological Issues assignments to be completed in no less than 3 days.

Day 3

Students will discuss the issues they came up with on the previous day and tell how these problems are magnified in cities. Students will discuss what a city is and how they think cities impact the environment. After the class discussion, each child will take 15 minutes to write about what they think the perfect city would be. Once they finish we will talk about the problems of cities from growing population to transportations issues in cities. The students will conduct an inquiry investigation on the affects of run-off from local streets and highways on plants. (See Effects of Pollutants on Radish Seeds and Appendix 2)

Day 4 & 5

Students will start to present their Project Based Learning Project (See 'Building a Sustainable City,') which they should have been given 1 month prior to the presentation time. At this time both the teacher and the fellow students are able to evaluate the presentations of their peers. Once the presentations are complete the students will complete a gallery crawl on the Ecological Issues presentations. The teacher will then review the information with the students through a quick formative assessment. The teacher will pass out white boards and pins and ask the students questions, and the students will hold them up with their answers. This will allow the teacher to gauge where their students are.

Activities

Because my unit focuses on solutions to situations that are bad, I would like to first introduce my students to basic concepts such as history of human influence on Earth, resource consumption, tragedy of the commons, pollution and biodiversity loss. These concepts and vocabulary will be taught at the very beginning of the unit.

Students will then learn the basics of human population and its influence on Earth and its resources. It is very important for the students to understand the different human societies and how they changed from the Hunter-Gatherer society through to the Technological Revolution. Students should know how humans lived though the four major societies and their impact on the environment. Students will be shocked to know that humans only became heavily populated and heavily reliant upon most natural resources in the past 200 years, due to technological advances in how we power our homes, the medications we use, and the jobs we work. I believe this introduction will catch the attention of my students.

Students will engage in several different learning activities that steam from the issues that we have in modern cities. The students will watch the animated movie 'The Lorax'; they should be able to see how the actions of one person can ripple out and cause destruction on a large level. Once the students complete the movie they will complete an independent lab activity that will be used to show the effects of run-off on plants from streets and cars. Once students have completed the movie and the independent lab activity the students will then present their Sustainable City projects.

Effects of Different Pollutants on Radish Seed Growth (Scientific Method)

Teacher Notes

Students should be able to identify the controls, dependent and independent variables, and constants in an experiment. Students will be able to create conditions that some plants live through and observe the effects that certain chemicals have on the environment.

All materials should be supplied by the instructor to insure the safety of other students. Below is a list of optional supplies that can be used by students. It is imperative that all students have been informed of all safety procedures and rules and all safety forms have been signed and returned.

As the students are preparing their investigations a great amount of cautions should be had with your students using Antifreeze and the Clorox cleaner, depending on the level of your students, you might want to test different pre-made concentrations of the Antifreeze and Clorox.

Experiment Materials	Safety	All Groups
-Antifreeze -Salt -Clorox Cleaner -Motor Oil -And any other House hold iteams	-Goggles -Apron -Gloves	-Radish Seeds (3 Seeds per Group) -Potting Soil -Styrofoam Cups with 3 small holes poked into the bottoms -Water

Student Project

1. Students in groups of 3 will choose a pollutant to test on their Radish seeds.

2. Students will collect all materials from the instructor.

3. Students will plant their seeds and introduce their pollutant. (The instructor should make one control for the entire class the day of the experiment)

4. Once the students have planted and labeled their seeds they will need to complete the first part of their lab report which includes the Problem/ Question, Hypothesis, Identification of the dependent and independent variable, and Procedure. (See Appendix 2)

5. Students should water their pots and make observations over a 2 week or longer period of time. (Time dependent upon the teacher)

Ecological Issues Research Project

Teacher Notes

This activity can be taught at anytime during your “Current Events” unit. In this unit, one should be teaching their students about current issues on earth. These topics could either pertain to Earth Science, Environmental Science or both. Before your students start on their projects they should watch the animated movie ‘The Lorax’ which shows the environmental impact of the production

and demand of one product. Students will be able to relate the situations present in the movie to real life situations such as the production and generation of power and other things that pollute the environment. (See Appendix 3 for Movie Questions)

Student Project

1. Students are to create a digital project using either of the following programs: PowerPoint Presentation, Promethean Flip Charts, or Animoto Digital Story Boards.

2. Students are to identify how the changes in human population will affect populations of other organisms and how you can change the effects of these particular factors.

3. Students will be assigned a topic from the list below. (If you would like your students to choose their topics it will be fine. Students should either do individual projects or groups of no more than three.)

Invasive Species Pollution

Global Warming Habitat Destruction

Drought Technology

Electronic Waste (eWaste) Acid Rain

Deforestation Climate Change

4. Students are required to give a background narrative of their topic. This should include but is not limited to pictures, sound bites and digital video. (Sources should be posted at the bottom of Animoto projects and on the last slide of the Flip Chart or the PowerPoint Presentation)

5. Students projects will be graded according to the rubric below. This will be a separate grade from the project presentation. At the time of the project presentation all students should be provided with a chart to complete during the presentations (Electronic Gallery Crawl) and a peer grading rubric that will be completed by the end of the presentation of the project.(See Appendix 3 for both grading rubrics and presentation charts)

Building a Sustainable City

Student Learning Objectives

Students will be able to explain the importance of developing cities and towns for people to be able to get around in easily without having to use cars for all transportation.

Students will investigate “green” building materials or reused and/or recycled materials used to build and furnish the city or town, with the purpose of reducing waste and increasing energy efficiency.

Teacher Notes

This project should be done as a problem-based learning assignment with a one month time limit. Students should be able to choose if they would like to complete the project with a partner or if they would like to complete it individually. If students choose to work with a partner then they must have a plan as to who is going to complete certain tasks. The students should be given their project rubric before they start their projects so they know their expectations. (See Sustainable City Rubric)

Students should focus on building their cities around the people that will live there versus building their cities around automobiles2. Students should research different types of cities, one of which is Bogotá, Colombia, where their mayor Enrique Peñalosa "transformed the quality of urban life with his vision of a city designed for people."2 Dependent upon your state you can have your student read the "State of the Environment" for your county. (See Student Resources Section)

Student Project:

1. You are to build a city or a town with the goal of being 95% self sufficient, meaning you should be able to provide the people all they need including food and energy without having to travel too far to get it or cause too much pollution .

2. Before you begin the planning of your city you should brainstorm the makeup of their city or town, during this time students should be given the opportunity to read about the new completely sustainable city in the United Arab Emirate and the trend of towns within cities such as Birkdale Village (Huntersville, NC), and Arsley Town Center (Charlotte, NC). (Neither of these examples are intended to be wholly self-sufficient but they were designed as walking communities.

3. Students are to write a paper with a minimum of two pages outlining where the city will be built, how they will build it, how the city will be powered, the transportation around the city, etc. (See rubric Appendix 4)

4. Students may complete one of the following: build a model of their city, create an Animoto digital story board, PowerPoint Presentation, or a Promethean Flip Chart.

(See Appendix 4)

Resources

An Inconvenient Truth. DVD. Directed by Davis Guggenheim. Hollywood: Paramount, 2006. This movie allows students to see some of the things that are happening to the planet due to the large amounts of carbon dioxide that is being pumped into the air.

"Building Green Home - BuildingGreen.com." www.buildinggreen.com http://www.buildinggreen.com/ (accessed October 13, 2010). This resource provides information on "green" building. This can be used by the students and the teacher to learn about ways

architects are innovating their building practices. This resource also has a list of products that are "environmentally preferable".

"A Tour of Masdar - Slide Show - NYTimes.com." The New York Times - http://www.nytimes.com/slideshow/2010/09/25/arts/design/26masdar-ss.html (accessed October 13, 2010). This resource gives a slide show of the sustainable city in the United Arab Emirate. Students will be able to see some of the things engineers have done to build a sustainable city and how they have used some other natural desert resources to their advantage. In addition there is a link to the actual story on this page that will allow students to read about how the city was made.

"Basic Information | Sustainability | US EPA." US Environmental Protection Agency. http://www.epa.gov/sustainability/basicinfo.htm (accessed November 8, 2010). This resource will allow students and teachers the opportunity to see what the Environmental Protection Agency says sustainability is since there are so many different definitions of this term. Students are then able to go different links on the site and learn more about the environment and how to protect it.

"Carrying capacity." Encyclopedia of Earth. http://www.eoearth.org/article/Carrying_capacity (accessed November 15, 2010) This resource will allow students to refresh their knowledge of carrying capacity and some of the limiting factors associated with the capacity of an area.

"FRONTLINE/WORLD Fellows . Brazil - Curitiba's Urban Experiment . Master Plan: History | PBS." PBS: Public Broadcasting Service. http://www.pbs.org/frontlineworld/fellows/brazil1203/master-plan.html (accessed November 19, 2010). This resource should be used by students to see how the Brazilian city Curitiba went through an evolution due to overcrowding and the loss of "Green" spaces, the city was redeveloped and became a model for urban planning.

Geisel, Theodor Seuss, and Dr. Seuss. The Lorax (Classic Seuss). New York: Random House Books for Young Readers, 1971. This book will give the students the opportunity to read about the Lorax and see how the actions of one individual can cause a vast amount of destruction for an area.

Dr. Seuss - The Lorax/Pontoffel Pock & His Magic Piano. DVD. Directed by Hawley Pratt. Washington DC: Universal Studios, 2003. As stated before with the book the Lorax, this movie will allow your students to visually see what happens when a person starts to destroy the environment and destroy the habitat of the inhabitants.

"Green Building Supply." www.greenbuildingsupply.com. www.greenbuildingsupply.com/Public/Home/index.cfm (accessed October 13, 2010). This resource provides information about building material that are considered "Green". They have products ranging from natural flooring, non-toxic finishing, environmentally friendly cleaner and more.

"LUMENHAUS. A brighter way. Everyday.." LUMENHAUS. A brighter way. Everyday.. http://www.lumenhaus.com/eu/index.html (accessed October 13, 2010). This resource allows students to see the building of a completely sustainable home.

McNally, Misty . "Recycled Materials make Countertops Visually Vibrant, eco-friendly." The Charlotte Observer, September 27, 2010, sec. Special Advertising Section. This article talks about recycled materials being used in countertops, this will allow students to see that materials that are recycled can be used as building materials.

OUROUSSOFF, NICOLAI. "Critic's Notebook - In Arabian Desert, a Sustainable City Rises - NYTimes.com." The New York Times - Breaking News, World News & Multimedia. http://www.nytimes.com/2010/09/26/arts/design/26masdar.html?_r=1 (accessed October 13, 2010). This resource is an article from the New York times of the very first fully sustainable city the United Arab Emirate. Students will be able to get ideas for the development of their city from this site.

"The Green (or Sustainable) Building: Part III - The Importance of Location, Orientation and Landscaping | The Green Economy Post: Green Careers, Green Business, Sustainability." The Green Economy Post. http://greeneconomypost.com/green-sustainable-building-location-landscaping-2403.htm (accessed October 13, 2010). This resource allows for its users to research "Green" building, policies and jobs.

(Appendix 1)

Implementing District Standards

North Carolina Standard Course of Study (Earth/Environmental Science)

1.01 The students will be able to identify questions and problem in the earth and environmental sciences that can be answered through scientific investigations.

1.02 Design and conduct scientific investigations to answer questions related to earth and environmental science.

1.05 The students will be able to analyze reports of scientific investigations and environmental issues from an informed scientifically literate viewpoint.

North Carolina Standard Course of Study (Biology)

5.01 Investigate and analyze the interrelationships among organisms, populations, communities, and ecosystems.

5.03 Assess human population and its impacts on local ecosystems and global environments.

(Appendix 2)

Group Members:	
Problem/ Question:	
Materials Needed: 1. 2. 3. 4.	 5. 6. 7. 8.
Hypothesis:	
Dependent Variable:	Independent Variable
Procedure:	
Data: Week 1: Week 2: **Conclusion**:	

(Appendix 3)

The Lorax Movie Guide

1. Describe the area where the Once-ler lives.

2. How did the Brown Bar-ba-loots live, what was their food source?

3. According to what you saw on the movie, what type of initial impact did the Once-ler have on the environment, if any?

4. Explain what the Lorax represents in the movie.

5. As the Once-ler's family came to work with him, what where some of the environmental effects they had on the land of the Lorax.

6. Explain how technology affected everything that lived in the land of the Lorax.

7. In your opinion, what does the "thneed" represent in today's society?

8. Explain where you think the animals in the movie "went" when they had to leave.

9. What could have the Once-ler done to make the thneed instead of cutting down the Truffula Trees?

10. Hypothesize where the Lorax went when he went away.

Gallery Crawl

Environmental Issue	How do humans contribute to this factor?	How does it impact the environment?
Invasive Species		
Climate Change		
Drought		
Electronic Waste (eWaste)		
Deforestation		
Pollution		

Habitat Destruction		
Technology		
Acid Rain		

Topic: _____ Name _____ Date _____

Earth/ Environmental Science Issues Peer Evaluation Presentation Rubric				
Criteria	Met	Not Met	Comments	Pts
Clear topic description in presentation with organized information.				
Clear description of environmental issue and how humans contribute to the problem				
Seems knowledgeable about the subject and research seems thorough.				
Asked questions of the class and had an engaging lesson. Got students involved in the class discussions.				
Presentation lesson is colorful, neat, organized with notes and information.				
Used PowerPoint, Flip Chart or Animoto to convey the lesson.				
Student did not read 100% word for word from notes or book but engaged the class with information.				
Was loud enough to be heard, was clear, organized in presenting information, used multimedia examples, or had other special visual aids for the lesson.				
Pros and Cons of subject.				
From this presentation I learned these three things…				
Total Points				/100

Topic:_____ Name:_____ Date:_____

Earth/ Environmental Science Issues Grading Rubric			
Criteria	**Comments**	**Points Earned**	**Points Available**
Topic clearly stated.			5 pts
Contains all the required information: Background/ History, Human Contribution to the Problem, Environmental Impact			45 pts
Completed in the correct format: PowerPoint Presentation, Animoto, or Flip Chart			15 pts
Contains Visuals			15 pts
Project is neat and information is clearly stated and thoughts are organized			10 pts
Rubric and a digital copy of the project is presented to teacher at the time of the presentation			10 pts
Total Points Earned	/100		

(Appendix 4)

Topic:_____ Name:_____ Date:_____

Earth/ Environmental Science City/ Town Project Grading Rubric			
Criteria	**Comments**	**Points Earned**	**Points Available**
Clear Plan for Transportation in the city/ town. (Low to no carbon emissions) What type of transportation will the citizens of your city use? Provide a rationale.			
Building materials: ("Green" Building Materials) What type of building materials will you and your workers use? Will you use buildings that have been abandoned?			
Housing: How will your citizens live? How will they furnish their homes?			
Clean Energy: How will you power your city? What types of "clean" energy will you use?			
Location: Explain the location of you city? Why did you choose this location? What are the benefits of developing your city here?			
Bibliography: Did you site your sources?			
Total Points Earned			/100

Notes

1. "Basic Information | Sustainability | US EPA." US Environmental Protection Agency. http://www.epa.gov/sustainability/basicinfo.htm (accessed November 8, 2010).

2. Brown, Lester R. Plan B 4.0: Mobilizing to Save Civilization. New York: W.W. Norton & Co., 2009.

3. "FRONTLINE/WORLD Fellows. Brazil - Curitiba's Urban Experiment . Master Plan: History | PBS." PBS: Public Broadcasting Service. http://www.pbs.org/frontlineworld/fellows/brazil1203/master-plan.html (accessed November 19, 2010).

4. "Carrying capacity." Encyclopedia of Earth . http://www.eoearth.org/article/Carrying_capacity (accessed November 15, 2010).

5. McNally, Misty. "Recycled Materials make Countertops Visually Vibrant, eco-friendly." The Charlotte Observer, September 27, 2010, sec. Special Advertising Section.