Energy Consumption

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Energy, you use it everyday; it is a vital part in today's society. Used worldwide and across the globe, we depend on energy to fuel our cars and provide us with electricity. It's the perfect commodity with cell phones, computers, and wifi being used on the daily. There's only one problem, though. Energy resources are being used at a very alarming rate and most of these resources are nonrenewable. In more simple terms, we're using more than we're making and our major sources can't be recreated. In 2014, the United States followed China for the most electricity production, so it's not just the U.S., it's other nations, too. This problem can be helped, of course. Using STEM subjects like science, technology, engineering, and mathematics, America (and the rest of the world) can greatly slow the rate at which fuel and energy is being consumed by decreasing the use of nonrenewable sources such as fossil fuels and depending more on renewable sources such as wind power and solar energy.

Science can provide multiple possible STEM solutions. According to the U.S. Energy Information Administration, "In 2015, the United States generated about 4 trillion kilowatt hours of electricity.[1] About 67% of the electricity generated was from fossil fuels (coal, natural gas, and petroleum)." The United States' use of renewable resources has slowly increased and in 2013, it accounted for at least 13% of the energy sources used.. Some of these renewable resources include hydropower, biomass, and sunlight. The U.S. can work to create new hydropower systems that convert potential energy to kinetic to produce electricity. According to the Union of Concerned Scientists, "Renewable energy resources like wind and solar power generate electricity with little or no pollution and global warming emissions—and could reliably and affordably provide up to 40 percent of U.S. electricity by 2030, and 80 percent by 2050." On to another

important note, most cars are powered by gasoline and diesel, which let out many pollutants. However, there is a safer and healthier alternative, which is ethanol. Ethanol is a renewable source produced from plant material; in the U.S., corn plays an important factor in manufacturing the biofuel. There are some disadvantages to using ethanol, but it lets out less air pollutants that lead to global warming, which is another main concern for today's scientists and people in general. Things like solar panels, which convert light rays into electricity, are also renewable sources. There are many possible solutions to energy consumption and we're just beginning.

Technology is the second subject in STEM. Technology makes our lives easier and we depend greatly on it. Our phones, cars, and even chairs are pieces of technology we use daily. Technology goes hand in hand with the engineering part of STEM. We can engineer new technology to allow greater energy conservation. Places like power plants, which provide us with energy, consume our water resources and can be detrimental to our health due to pollution. Another option we have is the *nuclear* ones. Nuclear power plants have their advantages. For example, they don't let out any pollutants and don't affect global warming, but they're extremely risky. The USC says, "Nuclear power plants produce no air pollution or global warming emissions when they operate but can cause catastrophic damage to human health and the environment in the event of a meltdown or other disaster, as evidenced by the 2011 Fukushima disaster in Japan." As said before, solar panels and hydro powered dams are a great alternative and can be 'engineered' and created. Other things may be the geothermal pumps that use heat from the Earth's surface to cool buildings, wind turbines that power generators to create electricity, tidal energy generators that use the tide's kinetic

energy, and biomass from living organisms. With the growing STEM field, there will be numerous people to play a part in creating these things. Although, there are some cons to this idea. The United States may not have enough money to fund these projects and to continue paying these engineers. The resources and materials used for the construction of these projects can also run our reserves dry, but with future technology and new discoveries, the world can hope to create better circumstances for these solutions.

The last part of the STEM subjects, mathematics, does not seem like it will be very helpful towards increasing energy conservation and decreasing the use of fossil fuels, but it does play a great part in it. A major part of solving the problem is the statistics. Statistics play a major role in solving this economic problem because they allow us to see the difference and energy use compared to other countries, years, etc. The United States will know if usage is increased, decreased, or staying the same. As said before, statistics are instrumental. For example, energy exhaustion statistics are estimated to be 89,256 trillion BTU (British Thermal Units) per sector in the U.S. and according to the U.S. Energy Information Administration, in 2012, 79.212 quadrillion BTU was produced and 95.058 quadrillion BTU was used in the United States. In the whole of North America, 116.191 quadrillion BTU was used compared to the 107.064 quadrillion BTU manufactured. Biofuels are renewable resources made from living matter and the United States uses 898 thousand barrels a day and we produce 940 per day. In 2014, China was the largest producer of electricity as well as in 2012, producing 101.781 quadrillion British Thermal Units. Another factor that includes math is funds, which was mentioned in the previous paragraph.

The STEM fields (Science, Technology, Engineering, and Mathematics) are growing and many are employed in related careers. For example, there is computer science and engineering. Architecture is also another college major that involves STEM, specifically the engineering and mathematics part. These fields are incredibly important to society. Why? Well, the greatest developments in society were related to STEM and established by people who were interested in the subjects of the STEM field. For example, one of the most noticeable developments in a STEM field is the introduction of Newton's Laws, which are rules that discuss gravity. Sir Isaac Newton is an important figure and is commonly found in - you guessed it - science textbooks. He was a mathematician as well as a scientist. Leonardo da Vinci is also a well known figure. He is best known for his sculpting and artistics skills, but he was also an engineer. In fact, he also had an interest in science, architecture, and invention. The final example is Galilio Galilei, another well known figure for his contributions towards astronomy during the Renaissance. Like all others previously listed he was interested in science or made contributions to it. Like Newton, he was also a mathematician and just like da Vinci, he was an engineer as well.

There are many possible solutions towards this growing problem and STEM can be a great factor in solving this problem. Because of this, the STEM fields are extremely important and useful. With the help of those participating in the growing STEM field, we can decrease the use of fossil fuels and nonrenewable resources, but instead develop more new and current technology supplemental to the future use of energy.