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The Impact of Disease on the Civil War

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by Intisar K. Hamidullah

Rationale

At times my students think war is glamorous especially given what they see in certain video games, movies and music videos. They are not informed in detail about the ramifications and long term effects of war, such as the wounds, innocent individuals affected and the diseases associated with war. The purpose of this curriculum unit is to integrate all academic content areas with the primary focus being the impact of diseases during of the Civil War. Being a middle school, special education teacher, I want to create a unit where my students will envision how social studies relates to math, science and language arts.

When I create lessons or units for my students I tell them why it is important for them to learn a particular concept. I want my students to know the purpose of the content in their life and how it could impact their future. Having awareness of the purpose of knowledge gives my students power over their learning. For reasons out of their control, some of my students deal with community issues that I have never imagined. As a result some of my students yearn for control or power over something in there life and when they come to school they attempt to gain control by exhibiting inappropriate behaviors, which unfortunately has manifested into behavioral issues that hinder them from appropriately associating with peers and school staff and at times it gets in the way of their academic attainment. Thus when lessons are presented they are told why and how it is important so they will want to learn the new concept and connect it to a previously taught objective. I also encourage students to ask questions and make connections about information that is presented. As a result, when this lesson is presented students will be reminded of their enjoyment of a previously taught unit on discernment of a hero, victim, warrior and ignoramus. During that unit they learned and explored the implications of war in the lives of children. For this unit they will explore the impact of disease on the Civil War.

During this seminar I felt behind my peers because I was not trained in biology or as a science teacher. However I felt the need to step outside my comfort zone to learn something new so that I could have something new and exciting to teach my students. When I learn something new from a workshop I inform my students that with the hopes that they will become lifelong learners. I encourage them that it is never too late to learn or try anything new. When I attend professional development I always share with my students the following day what I learned and they are excited for me to come back and share.

I teach in Charlotte, NC which is the largest county in the state and the twenty-fifth largest school district in

the United States. My school district has over 180 schools and I teach in one of two separate schools for students exclusively with Exceptional Needs. My school is a public separate school for children primarily with Behavioral and Emotional Disabilities in grades kindergarten through twelfth. 95% of the students receive free and reduced lunch, and the entire school population is ensured a free appropriate public education per individualized education plans. Although the primary disability is Behavioral and Emotionally Disabled, we provide services to students with the following disabilities as well: Autism, Other Health Impaired and Intellectual Disabilities. The racial breakdown for the students served is 72% African American, 23% Caucasian, 2% Hispanic and 3% other.

Background

In 1967 the Surgeon General of the United States announced that it was time to close the book on infectious diseases. Unfortunately, this statement was premature. Although our society may not experience epidemics as often as in the past, the epidemics of the present are still a menace to humankind. This unit will focus on four diseases: Measles, Small-pox, Tuberculosis, and Syphilis. These diseases caused a great deal of the deaths before, during, and after the Civil War. Additionally the lack of known treatments and lack of unawareness of prevention had detrimental effects on how these diseases spread throughout the world. Consequently with the advancement of medicine, treatment, prevention, and vaccinations the impacts of these diseases are not as harmful today as during the Civil War.

The invention of the microscope in 1660 enabled Robert Hooke and Antonie van Leeuwenhoek to study cells and other microorganisms that caused diseases. Robert Hooke looked at a cork taken from an oak tree and saw tiny cell-like compartments. The microscope helped him to see the layer of cork thirty times its original size, and thus details of a cell. Much of life is made up of cellular organisms: unicellular life or larger multicellular life. Cell Theory describes how living things are made of one or multiple cells, that cells carry out functions needed to support life and that cells come from other living cells.

There are two different kinds of cellular life: eukaryotes and prokaryotes. One major difference between the two types is that a eukaryote cell has a nucleus and a prokaryote cell does not. The nucleus is the largest organelle in a eukaryote cell and contains the DNA. In contrast, prokaryote cells simply contain DNA in their cytoplasm. Many other organelles are essential to the life and functioning of the eukaryote cell. These include ribosomes, endoplasmic reticulum, mitochondrion, and the Golgi apparatus.

In addition to inventing pasteurization to kill bacteria and keep foods such as milk fresh, Louis Pasteur is famous for having studied the causes of sickness in humans and animals. In 1856 he used the microscope to study microorganisms found in the blood of animals and people who were sick. These microorganisms are generally called germs, and Pasteur tried to better understand germs to help in prevention of disease. Studies like these led to the Germ Theory, which states that microorganisms too small to be seen without a microscope can invade the body and cause certain diseases. Prior to confirming the Germ Theory, most people believed that certain diseases had unnatural causes, such as a punishment for evil behavior, demonic possession, etc. Pasteur widely popularized the idea that many diseases were caused by bacteria, the most ancient type of cellular life on earth. Bacteria are found literally everywhere, except where humans have purposefully used chemicals or sterilization to prevent their growth. Thus, although many types of bacteria are useful, such as those living in the human gut which aid our digestion; we have developed antibiotics and other

therapies to kill bacteria viewed as harmful.

But germs other than bacteria can cause infectious disease too. In particular viruses are extremely tiny (smaller than cells), but cause some of the most deadly diseases known. All viruses need to reproduce by attacking cells; they use the host cell's metabolism (life properties) to instruct the cell to make copies of viruses which then leave the cell to infect further cells. In this way, cells of human tissues and organs such as lungs can be infected and destroyed by bacteria and especially by viruses. Bacteria and viruses can be passed between humans in many different ways, including via sneezing, talking, coughing, singing, ingesting contaminated food and water and through sexual activity. The poor health conditions of war thus often make it easier for transmission of bacteria and viruses between humans.

One would naturally anticipate that the highest number of casualties during a war is from gunfire. However, this was not true during the Civil War; three out of five Union troops died of disease, whereas, two out of three Confederate troops similarly died. ¹ More men died throughout this four year period than in any other war experienced by the United States. The cause for the disproportionate number of deaths was attributed to filthy living conditions in army camps, nonexistent surgical equipment, spoiled and poorly prepared foods, unwashed surgeon's hands, and other poor health conditions.

The Civil War was a breeding ground for diseases caused by bacteria and viruses. At the time little was known about what caused diseases. Surgical techniques ranged from barbaric to nonexistent. As a result a soldier had a 1 in 4 chance of surviving war because of poor medical care. During the early 1800's physicians had minimal training, in fact Harvard University did not own a stethoscope until after the war ended ² . At the beginning of the war the North had 98 doctors whereas the Confederate had 24 doctors. At the end of the war in 1865, the North had 13,000 medical doctors and the Confederates had 4,000 doctors. Since women were not allowed to fight, they often volunteered as nurses. Due to the efforts of Clara Barton, the Red Cross was established to improve medical conditions for soldiers and citizens. According to Walt Whitman, surgeons were butchers because limbs would be amputated in an effort to minimize pain and prevent further spread of infections to other soldiers, but these surgeons did little to minimize pain. At times death or infection set in because the two and four wheeled carts used as ambulances were unreliable and overcrowded. If events that preceded the Civil War had been resolved differently, then this dreadful chapter in US history might have been avoided.

Whether it was the Abolitionist movement in the 1820's and 1830's, the publishing of Uncle Tom's Cabin in 1852, the Dred Scott decision in 1857, the raid on Harper's Ferry in 1859, or William Lloyd Garrison's Anti-Slavery Society, the North was making it clear that they were not in favor of slavery. Then the decision of slave versus freed states was an issue during the Missouri Compromise of 1820, Compromise of 1850 and the Kansas-Nebraska Act of 1854. The aforementioned were all coupled with other differences between the North and the South. The North wanted federally sponsored improvements of roads, railways and canals and the South did not. The North wanted a high tariff for manufactured goods, whereas the South thought it would interfere with the established foreign trade for cotton. The North wanted a currency system, whereas the Confederates did not think the currency would benefit them. Of course, the largest issue was slavery with the North being against it and the Confederate being a proponent for it. Finally Abraham Lincoln who was against slavery was inaugurated President on March 4, 1861. The culmination of the aforementioned events was the start of the Civil War on April 12, 1861.

In addition to the Battle of Antietam, Battle of Bull Run, Battle of Gettysburg, Battle of Fort Sumter, etc. history was also taking place off the battlefield. On January 1, 1863 the Emancipation Proclamation was instated by

President Lincoln. With this decree most African Americans hurried to enlist in the Northern Army. In spite of being free they still experienced discrimination, evidenced by substandard supplies, rations and payment inequities. They were given seven dollars per month plus a three dollar clothing allowance. Their white counterparts were given thirteen dollars plus a three dollar and fifty cent clothing allowance ³. The differences were enough for some to refuse to enlist; however, others were eager to be a part of all black regiments, like the Fifty Fourth Regiment of Massachusetts. Two years later, on April 18, 1865 the South surrendered and the Civil War was over. Along with the end of the Civil War, the 13th Amendment was passed abolishing slavery.

Although the purpose of war can be to repair political conflicts, to obtain territory or to defend against invaders, war has always involved disease. During the Civil War not only did soldiers have to withstand bullets, shells, and bombs they also had to worry about infections. Additionally, not only was this war difficult to deal with physically, the ramifications emotionally were lifelong. The circumstances soldiers found themselves in were unimaginable and ranged from imprisonment, family separation, death, and watching fellow injured soldiers. Consequently, dealing with these circumstances one tends to develop anxiety, depression, post traumatic stress disorder, drug abuse, alcoholism and nightmares that do not fade. Although these emotional side effects of war are devastating, so are the diseases that can often be incurable. The seven most common diseases in army camps were typhoid fever, smallpox, measles, diarrhea, pneumonia, malaria, and tuberculosis. ⁴ For this unit we will focus on the history of measles, small pox, tuberculosis, diarrhea and syphilis. An English Professor stated that nothing could be more ridiculous than to contend that disease is always the primary cause of great historical change ⁵. But it is important to examine the episodes that influence disease.

Measles

In 1762 a French Physician, Tissost pointed out that measles rarely killed and when death occurred it was due to complications. However, at the end of the century it was concluded that this disease is more common, more dangerous and more widespread than most people believed. Although, in North America epidemics were less frequent they tended to be severe when they occurred, attacking people of all ages. Measles was also called the Covered Wagon Disease because it traveled with human communities. As a result of accessible travel and a growing population, measles became an endemic disease of North America never absent and reaching epidemic proportions at intervals ⁶.

Measles was thought to be a disease of large cities. Urbanization brings close contact between large groups of people which allows viruses and diseases to spread easily. Although a source for the infection was not found in humans it was suggested that large groups of animals living closely with humans passed the disease. The disease was identified as a virus in 1911. Scientists had started to study measles infections, and realized that development of a vaccine would prevent the spread by causing lifelong immunity. John Enders, a Harvard graduate student, successfully grew the virus in brain tissue, as well as cells from the skin, muscles, and intestines. The virus was tested in human kidneys, human amniotic fluid, fertile hen eggs, and it ended up that chick embryo cell cultures became most useful in producing the measles vaccines, similar to methods still used today. The first demonstration was done in monkeys injected with virus and observed to develop protective antibodies against the virus. After that success a clinical trial was done using American children. Consequently, in 1961 Enders and colleagues reported that measles infection could be prevented through

vaccination ⁷ . Widespread vaccination of children caused the incidence of measles to reduce drastically. Accordingly the World Health Organization reported that during the 1980's and 1990's over 2.5 million children died from measles due to lack of vaccination given to susceptible individuals ⁸ . From the records during the Civil War, we know that two thirds of the soldiers died from infectious diseases. In the Union army over 67,000 men had measles and more than 4,000 died. During the first year of the war alone, there were 21,676 reported cases of measles and 551 deaths of Union soldiers mainly from respiratory and cerebral brain involvement.

Measles is transmitted between humans through the air, such as by coughing, talking and sneezing. Infected individuals contract the virus through the lining of the mouth, throat, nose and eyes. Once infected it takes the virus two to four days to replicate inside of respiratory cells and to spread to lymph nodes. Then the second round of viral production occurs when it enters the blood stream within the white blood cells. Next, the virus circulating in blood carries infection to many parts of the body. During the final eight to twelve day incubation period, fever, weakness and loss of appetite is followed by hours of coughing and runny nose and eyes. At this point the infection spreads through tissue and the virus replicates throughout the body causing signs and symptoms of disease. Finally, cells in the capillaries become infected and interact with the body's natural immune system and a rash develops and spreads on the face, arms, legs and rest of your body ⁹ .

Small-pox

Stories of small-pox are interwoven in historical migrations and wars. The disease changed the course of history by killing generals, kings and decimating enemies. Several historical figures allegedly had skin diseases and distinctive marks left behind by smallpox. For example, the Egyptian Pharaoh Ramses V died of an acute small-pox illness in 1150 BC ¹⁰ . While looking at mummified remains it was discovered in 1898 that markings on his face and neck resembled typical small-pox lesions. Other places where similar outbreaks existed were 1346 BC Hitters, 595 BC Syracuse, 490 BC Athens, 48AD China, 583 AD Korean Peninsula and 585 AD in Japan. A typical writer describing small-pox would document sores on the head, face and trunk, which spread all over the body if not treated. The disease often involved famine and starvation since diseased people became unable to work on their respective farms to cultivate or prepare food.

Small-pox is caused by variola virus. The virus first infects cells in the mouth and nose, and then spreads to mucous membranes and travels to lymph nodes. Then the virus gets in the blood stream and moves throughout the spleen, liver and lungs. In these locations, the virus replicates producing a large infectious viral population. The incubation period is between twelve to seventeen days from initial exposure. Here the virus invades the blood again which ends the incubation period and the person becomes very ill. By now the patient typically has a high fever, muscle pain, abdominal pain, and vomiting for symptoms. Then the virus continues to spread to the skin causing eruptions for three to four days. First a rash appears, and then raised skin filled with fluids becomes evident, and the lesions contain infectious virus.

A person infected with the small-pox virus can infect others anytime after the rash appears, and when scabs are falling apart. The virus can contaminate clothes and linen for several months after the initial incident. It was documented that in the Sung Dynasty from 960 to 1280 dried small-pox scabs were inhaled as a preventative measure, because the (hopefully) dead virus would cause the immune system to protect against

live virus in the event of later infection ¹¹ This was called variolation. Much later, a physician named Edward Jenner and a farmer named Benjamin Jesty compared small-pox to cow-pox and used fluid from cow-pox as a vaccination for small-pox, because it was determined that the immune system could be successfully primed to protect against small-pox virus if it first saw cow-pox virus. ¹² Several influential people opposed Jenner's work. Lord Bryon thought people would start to look like cows, as a result. In contrast, President Thomas Jefferson congratulated Jenner for his research.

This work was followed by Benjamin Waterhouse a Harvard Professor who focused his energies to use the cow-pox virus to vaccinate against small-pox, thus protecting humans from getting the disease. In 1783 he received a sample of cow-pox virus and used it for additional research. Jefferson was so pleased with Jenner's work he sent it with Merriweather Lewis and William Clark when they explored the Louisiana Purchase to use if necessary. Shortly after that expedition the fourth president, James Madison signed into legislation a law encouraging vaccinations. However, due to his religious affiliations of being a Quaker, Waterhouse was against mass use of vaccinations which led to him being dismissed from his post at Harvard. Then the climate in Washington repealed vaccinations as a law in 1820 and epidemics of small-pox and related deaths continued to rise in United States ¹³ . Over 150 years later in 1950 the Pan American Sanitary organization was determined to conquer small-pox in America. In 1970 almost all small-pox was eliminated in the US. From 1953 to 1966, the World Health Organization proposed a small-pox eradication program in two steps. The first was to test all vaccines to ensure safety and effectiveness. Then the second step was to reduce the number of small-pox outbreaks. Years later Africa, Asia, Brazil, Ethiopia were all a part of the eradication of small-pox.

Tuberculosis

Tuberculosis (TB) was found in body remains in Egyptian mummies and in pre-Columbian human remains in South America ¹⁴ . Hippocrates described the disease as a pulmonary infection in 500 BC. TB is an airborne disease caused by mycobacterium. Due to poor hygienic and social conditions tuberculosis spread rapidly among humans in the seventeenth and eighteenth centuries in Europe. During this time people were living extremely close together making it easy to spread TB from coughing. Transmission was also said to be caused when people spit from using various tobacco products or through sharing a common drinking cup ¹⁵ .

Since it is an airborne disease, TB is easily spread to another human's respiratory system (lungs) where it either stays or travels further to the nervous system or bone. Incidentally, a person can be infected and remain asymptomatic for life, whereas, another may progressively waste away losing a considerable amount of weight in addition to suffering other side effects. People may even cough up blood from their infected lungs and one's bone marrow may fail to produce replacement red blood cells. The treatment plan for TB in the nineteenth and twentieth century's was for people to live in isolation. While in isolation patients were treated by receiving nutritious meals, exercise and sleeping outdoors. However during the Civil War isolation was impossible due to the wartime environment. Not to mention, the symptoms of TB, coughing, a fever, weight loss, and night sweats could have been symptoms of other diseases. Normally when a soldier was initially infected the symptoms eventually went away. However when they came back they were worse and since they were not treated properly initially that is why the death rate for soldiers continued to be high. Even though patients had alternate living environments they still had to worry about physical defects. At times people had to endure a lot to prohibit either or both lungs from collapsing by pumping air into the diaphragms. Then in

1956 a combination of drugs were found to be successful in treating TB resulting in closing the isolation environments and patients were instead treated on an outpatient basis.

Prior to finding a treatment, the Nobel Prize was given in 1905 for research on identification of the TB infection. This experiment became the basis for the skin test that is used today. A small amount of Purified Protein Derivative (PPD) from the virus is injected into the skin of one's forearm. Then within 48 hours if one is infected, the skin will be raised at the surface of the injection site.

Syphilis

Researching syphilis, I found an article stating that Christopher Columbus brought it back from America, whereas a different book stated that he brought it back from Haiti. Nevertheless, it seems that Columbus brought back the disease syphilis to Europe in 1494 along with other goods and skills. This sexually transmitted disease was first documented in French troops during a war in Naples. It was known as the Naples disease in France, the Spanish disease in England, and the French disease in Naples. During the beginning to the twentieth century it was estimated that the risk of acquiring the disease was between 5 and 10 percent.

Syphilis is a sexually transmitted bacteria that is passed either through vaginal, anal or oral sex. It can also be passed from a mother to child during pregnancy. During the Civil War officers contracted the disease from attending brothels or from prostitutes. This disease is easy to overlook if the symptoms are not painful. The symptoms include an ulcer on the genitals, anus or mouth. It could appear as a rash on the back, chest or palm. It might even show up on hands or sores on the soles of feet. Today it is detected from a blood or visual examination. After two years if not treated the infection may cause serious health problems later in life which could lead to heart, brain or nervous system malfunction.

Syphilis is divided into three different stages: primary, secondary and tertiary. During primary syphilis a lesion may appear on the genitalia but can heal spontaneously within weeks. In secondary syphilis, one may see skin rash, mucous membrane lesions, enlarged lymph nodes and a fever. This can be followed by a period of latency where one may not observe any visible symptoms. During this stage the bacteria may relapse if left untreated. Finally, in the third stage erosion of the tissue or bone occurs, blood may not flow through your aorta, and individuals can suffer dementia.

Additionally, an infamous study was conducted named the Tuskegee Experiment from 1932-1972. According to the Centers for Disease Control, 399 African American men with the disease and 201 without the disease were studied to obtain data on the effects of syphilis deliberately left untreated.¹⁶ The men were told they were going to receive free meals, free medical examinations and free burial expenses. Almost ten years before the study began, penicillin was used to treat this sexually transmitted disease, but it was still not given to these men. Consequently, with the disease left untreated the men were left with a lifetime of illness, and the problems were passed on to their wives and offspring. In 1972 the study ended and a year later congress convened a panel to discuss the experiment. As a result of the findings a class action lawsuit was filed on behalf of the participants in the study. Then, in 1974 a ten million dollar out of court settlement from the United States government was promised to the participants to cover medical expenses and burial. Another year later, widows, wives and children were added to the Tuskegee Health Benefits Program. Then in 1995 the program expanded to include health and medical benefits. On May 16, 1997, President William Clinton

apologized on behalf of the nation for the Tuskegee Experiment ¹⁷ .

Impact of disease during Civil War

After studying medical records from the Northern Army and Civil War Veterans it was concluded that several hundred potential recruits were unable to join due to poor health history from childhood illnesses and slavery. Although, if one did pass the exam, they dealt with disease on crowded battle fields, trenches and encampments from frequent outbreaks of diseases. The ratio of the number of deaths from disease to wound-caused deaths was much higher for black soldiers than for white ones. The high death rate for blacks was attributed to men being weak and more susceptible to disease from poor living conditions, unhealthy posts, unbalanced diets, and indifferent treatment. Out of the seven diseases previously mentioned, diarrhea (caused by certain viruses and bacteria) was the greatest killer, accounting for 20 percent of all deaths caused by disease, followed by 14 percent pneumonia and 13 percent typhoid ¹⁸ .

Socioeconomic background affected soldier's chances of survival during the Civil War in the areas of previous residency, occupation and skin color for blacks. The mortality of a white Northern soldier was better if he was not a farmer and lived in the city because he was probably exposed to other infections and his body had built immunity to the disease. The mortality from disease for slaves formerly engaged in other nonfarm occupations such as house servants was as low as the death rate for those in elite occupations, but their advantages over field hands resulted exclusively from their lower probability of contracting diseases. ¹⁹ Consequently, black soldiers with darker skin were more likely to die of disease. Since prior to joining the Civil War their bodies and immune systems were not prepared to handle the environmental stress of war.

In conclusion a recruit from a healthy background who had limited exposure to disease had a lower immunity to disease compared to a man from an unhealthy background. Additionally a person who had enlisted with better nutrition was advantaged over a man with poor nutrition, which left him prone to disease. As a result, a measles and small-pox attack would confer immunity and reduce the likelihood of contracting the disease in the future. Whereas a previous attack of TB does not have any influence on resistance to a future attack.

In addition to socioeconomic background affecting a soldier's susceptibility of acquiring a disease, living and sanitary conditions also affected their chance of survival. Some soldiers failed to wash their bodies and their clothes since they were used to being taken care of by either their mother or wife. Additionally camp regulations stated they were supposed to dig an eight foot trench for human bodily wastes and to cover it with six inches of dirt every night. However, most soldiers were disgusted by this so they relieved themselves in an open space instead. Doing this invited flies around the camp accompanied by diseases that spread to the men and their food rations which led to an unhealthy living environment.

Not only did the soldiers have to endure an unhealthy living environment when they went to the field hospital, they were operated on by a surgeon who had blood and pus on his coat from the previous patient. Then while he was operating on his patient if he dropped his instruments he would pick it up, rinse it off and continue to work on his patient. In addition to the high number of soldiers affected by illness, many were also wounded from bullets. Due to the disproportionate ratio of soldiers to surgeons, the surgeon had to look at a soldier briefly and determine how he was going to be treated. If he was slightly wounded, in the interest of saving as many soldiers as possible, he was overlooked. However if he was wounded on a limb the surgeon would

amputate within ten minutes. First the doctor would give the soldier a dose of whiskey and then place chloroform on a cloth over his nose to place him in an unconscious state for the amputation. Coincidentally, there was a 75% survival rate for amputations if they did not succumb to fever. ²⁰

Despite a high survival rate for amputees, if they were infected with one of the common deadly diseases their chance for survival rates was not as favorable. Since vaccinations were not available most surgeons and nurses depended on quinine, chloroform, opium, morphine and rhubarb to treat soldiers. When they did not have access to those drugs and chemicals they used natural remedies. According to a doctor's records for treating patients he noted white sumac, red elm, prickly ash and poke was mixed and applied to a syphilis rash ²¹. Then for stomach and bowel symptoms soldiers were treated by drinking a mixture of raspberry and whortleberry leaves. Usage of natural remedies was essential if the doctor was unable to secure necessary drug supplies.

Even if a soldier survived the Civil War he incurred lifelong health challenges. A fifty year old Civil War veteran of 1890 resembled his seventy five year old descendants of today ²². Additionally, Union soldiers were more likely to survive a wartime illness, but Southern soldiers lived several years longer after war. Consequently, the more infections a person is exposed to the greater likelihood of arthritis, heart disease, stroke and even cancer later in life.

Summary

Months after the Civil War ended Abraham Lincoln gave the Gettysburg Address. During this speech he talked about the fallen soldiers which gave a new meaning to war. Although the end of the Civil War eradicated slavery it also birthed different political, economic and social trends. The way in which the dead were dealt with was a growing concern during the Civil War. Obviously disposal of bodies was an issue especially since more people died during this war than any other American war. Over 600,000 soldiers died during the Civil War whereas 400,000 died during World War I. Soldiers feared dying and having to be buried by their opponents in the war, especially since the details of the burial conditions differed depending on who won the battle and which unit was assigned to burial duty. On the North, mostly African Americans were assigned burial duty. Therefore, a deceased soldier's burial would range from a blanket, separate grave, common grave, pine coffin, or burial container depending on what was available.

In addition to burial concerns, identification of the deceased was a growing issue. During this time the Federal Government helped The North with identification of bodies. This is why soldiers started pinning their name to their uniform leading to modern day dog tags. On the other hand, when they died in the hospital they had more resources, staff and time to take care of matters of identification. Not to mention they had cemeteries beside the property which made it even easier and organized for burial. In 1862 Congress approved and purchased land to erect twelve cemeteries near major battle fields.

Strategies

The strategies were selected for this unit with connections and reflection time for students in mind. During this unit it will be imperative for students to make connections between content, keeping in mind that the subject matter is not taught in isolation. Additionally students will be asked to create and reflect on concepts throughout each strategy used within the activities. Furthermore, the strategies will give students an opportunity to embrace a multitude of learning styles (tactile, visual, kinesthetic and auditory). Lastly, students will be given choices for how they may want to complete an activity. Giving students an option allows them control and ownership over their assignments.

Daybook

Ralph Fletcher states a daybook is your personal space to write badly ²³. My students use daybooks as their safe space to record thoughts, feelings, highlights, low lights, newly learned concepts, notes from the board, formulation of plans for potential writing pieces, handouts from class etc. The National Writing Project also uses the daybook in an effort to help student validate their thoughts. So when a student wants me to see or respond to something in the daybook I respond on a post-it note or the student makes a draft of the piece for me to see so that their daybook is still in their safe space.

Graphic Organizers

Graphic organizers are used for students to organize new information. They can use graphic organizers to help understand material presented. They can be used in all phases of learning from brainstorming ideas to ordering new findings. This strategy is known to help the brain recall information better when personal creativity is involved. KWL, Storyboard, and a Venn Diagram are examples of graphic organizers used during this unit. However in the class writing area there are other examples of graphic organizers the children may use if they decided during other activities throughout the unit.

Foldable

My students enjoy using foldables because it gives them an opportunity to cut, fold, staple and create a colorful place to store newly learned information. Dinah Zike published books explaining and describing foldables. I reference examples from her Big Book of Science although they can be used in any content area. ²⁴ There are several different kinds of foldables in this unit we will be using the Layered look book, Four-door book, Vocabulary book, are examples of the foldables we will be using for this unit. However in the class writing area there are other examples of foldables the children may use if they decided during other activities throughout the unit.

Literature Circle

Picture books use illustrations, graphics and or photographs in addition to text making them necessary and helpful to reinforce concepts in science and social studies. ²⁵ My students perform academically on different grade level so I need to have a variety of books for students to read in order to accommodate their reading and interest level. During literature circles students will be broken into groups by ability level. Throughout the different groups I will share and introduce books on their level that they may be interested in. Doing this will peak their interest to read the book independently and desire to share the book with the group.

Dialectic Journal

Using two pages side by side in the student's daybook, the student will fold two pages to the center so one has four columns to write in horizontally. In the first column the student will take notes on the taught concept. In the second column the student will write questions, comments or reactions to the notes they took in the first column. Then in the third column the student will pass their daybook to a buddy who will respond to information in the second column after reading it. Finally the peer will pass the daybook back to the original owner who will then respond to what the peer wrote. This strategy will give students an opportunity to sort through their ideas prior to asking the teacher questions. It will also give the student an opportunity to figure out answers to their questions or make connections to what the peer said and their questions may be answered or it may be an opportunity for further research.

Higher Order Thinking Skills Questions

Knowing, organizing, applying, analyzing, generating, integrating and evaluating are the levels of questions stems I will teach my students how to use. We will discuss the difference and definitions between the levels of questions. Knowing questions teach students how to define and recall information. Applying questions teach students how to demonstrate prior knowledge within new situations. Analyzing questions teach students how to examine parts and relationships. Generating questions teach students how to produce new information, meaning, or ideas. Integrating questions teach students how to make connections and combine information. Evaluating questions teach students how to assess quality and reasonableness. It will be important for the students to be able to differentiate between the levels to encourage them to use their higher order thinking skills when learning and reviewing new information. Doing this will give students a chance to integrate new information being learned with prior knowledge in order to create and answer questions. The questions will motivate students to learn, highlight lesson content, integrate lesson content with what they have already studied, structure a high level of understanding, and promote incorporation of students' knowledge, values, and cultural background with learning objectives. Additionally, they must develop their abilities to question in order to become successful problem-solvers, critical thinkers, and decision makers. ²⁶

Exit Ticket

Prior to exiting the classroom a student will have to respond to an exit ticket. The question on the exit ticket will pertain to the content taught or reviewed that day. Getting students to respond using a ticket provides a different form of evaluation. The exit ticket will not always be a question the students may be asked to draw a picture and label the parts of a cell. Or they may be asked to write a poem about a bacteria. It is just used as a different way to get the students to think about the knowledge they learned while checking for understanding.

Activities

Day 1: KWL on the impact of disease and Civil War

The teacher will review with students what a KWL chart is. K is for what I want to know. W is for what I want to learn. L is for what I learned. The first day the unit is introduced students will have an opportunity to make a KWL chart independently in their daybook. Then they turn and talk with their neighbor about what they placed in the know column. Next they will turn and talk to a different neighbor about what they want to learn. Turning

and talking to a neighbor may make them think of something else they might want to add to their KWL chart. Finally students will share with the class. I will make a KWL chart of a permanent bulletin board display that we can refer to throughout the unit. Students will tell me what they know and what they want to learn and I will write it on the class KWL chart.

Teacher will also place a timeline on the permanent bulletin board. Every time we explore an interesting event the first student who asks to add it to the timeline will be able to write it on an index card and post it on the board. This way the students will have a visual display of the events they are exploring.

Day 2-5: Cell Comic Strip

In this activity students will be able to describe Cell Theory. Students will also be able to explain the functions of each part of the cell and how it relates to other parts of the human body.

The teacher will explain and show students the difference between a prokaryotic and eukaryotic cell. Using daybooks students will explore the description and functions of cellular components. The cell components are cell membrane, cell wall, chlorophyll, chromosomes, cytoplasm, endoplasmic reticulum, golgi bodies, lysosome, microtubule, mitochondria, nuclear membrane, nucleolus, nucleus, plastid, ribosome, and vacuole. Students will play a matching game to assess understanding of the descriptions and functions of the cell components.

Then students will create a cell comic strip about a missing component. The directions for the comic strip will be for the students to think of a component they think the cell can do without. Then create a comic strip about the missing component. Students will be given example comic strips from the news paper to help generate ideas. When students are ready they will draft ideas on a Storyboard before they publish their Cell Comic Strip. The exit ticket for the Cell Comic Strip will ask the students to describe the most favorite and their least favorite part of the activity.

Day 6-20: Describe that Disease

In this activity students will explore three science objectives. First students will describe, compare, and contrast diseases by placing information in a Venn diagram. Second students will evaluate human attempts to reduce risk of infections and treatments for infection. Finally students will analyze data to determine trends in how infections spread.

Throughout the unit the teacher will be discussing small-pox, tuberculosis, measles, diarrhea, and syphilis and students will take notes during the discussion in their daybook. After each disease is discussed students will have to create either a foldable or graphic organizer to reflect the knowledge obtained. Each foldable or graphic organizer must contain information about the history of the disease, treatment in the past and present, implications during The Civil War, and miscellaneous information the student wants to provide. In an effort to extend knowledge about the diseases students will have to write either a letter or a journal entry telling someone about their day. Included in the letter or journal entry students will need to pretend they are a soldier from either side and pick a disease they are suffering with. Then they will need to tell about the events in their day either in the hospital, on the battle field, marching, at camp etc. Students will need to vividly explain the events they have witnessed and or are dealing with.

Day 20-25: Why was that said?

In this activity students will examine the Figurative Language in the Gettysburg Address by interacting in a

group setting, reflecting on the learning experience and describing the impact of the outcome of speech at the end of the Civil War.

The teacher will review with students the components of figurative language. Students will take notes and include examples in their daybook on imagery, simile, metaphor, alliteration, personification, onomatopoeia, hyperbole and an idiom. Then students will make a Vocabulary book foldable to review the components of figurative language. Next we will read independently and collaboratively the Gettysburg Address. After it has been read students will be given an opportunity to complete the Dialectic Journal in their daybook about the speech. Following that we will discuss the document to consider historical implications and possible consequences from that speech. Students will also be asked to describe the figurative language used within the speech. At the end of this activity students will complete an exit ticket. On the exit ticket students will be asked to respond to one of the following questions, think about what would have happened if the South won the Civil War if Jefferson Davis would have made the Gettysburg Address, and what he would have said.

Day 28-30: Questions, Questions, and Questions

In this activity students will generate questions, make connections, draw conclusions and make inferences by appropriately participating in whole group discussions. They will consider implications, consequences and conclusions of those decisions.

Throughout the unit students will generate a bank of questions that relate to knowing, applying, analyzing, generating, integrating, and evaluating. Teacher will review with students the differences between each level of question. Teacher will also randomly ask students to answer the questions they collaboratively generated. Then the teacher will place 6 posters on the wall titled with each level of question. Students will be placed in pairs and given a color coded stack of question related to the topic of war and disease. Within the pair they will have to read the question and decide which level the question is associated with. They will place each question under the appropriate poster.

Day 1-45: Book Club

In this activity students will increase fluency by reading and exploring, self selected literature. Students will draw conclusions, take notes, make connections, draw inferences, and compare and contrast information. They will take an active role by appropriately discussing literature in small groups.

Teacher will ask students if they have ever read books on disease and or the Civil War. Then the teacher will explain to them that books help reinforce, and review concepts previously taught. Before revealing the book display teacher will read a portion of *Pink and Say*²⁷ in an effort to peak their interest about the books selected on war and disease. Teacher will introduce and explain the Book Club Rubric to students. They will realize that they must read 5 picture books and 1 novel throughout the unit. While reading the self selected picture books student must complete a book recommendation form. The form will explain the students recommendation rationale for the book to their peers. Additionally students will complete self selected activities from the novel list while reading the novel.

This activity will be completed throughout the entire unit. If a student completes another activity early they can go to the book display and work on the rubric. In addition to that students will work on the novel activities for homework every night until completed.

Throughout the unit we will also view excerpts of the Civil War Journal movie series and the film *Glory*. We will

view the portion that depicts the treatment of the sick prisoners at Andersonville and a part that talks about the formation of the 54th regiment. Looking at the film will give the students a visual image of the events that occurred during the Civil War.

The students who read *Killer Angels* will watch the film to compare and contrast the movie to the film. While watching the film students will take notes in their daybook to record similarities and differences between the novel and the film. Upon completion of the film we will have a discussion about their observations and conclusions.

Day 45: KWL

Students and teacher will review what we placed in the know and wanted to learn column. Then students will refer back to the page in their daybook where they created their initial KWL chart and write in the third column what they learned. After they complete the third column independently they will share what they learned with the class and the teacher will complete the third column on the class KWL chart. For the final exit ticket students will have to answer what was the most interesting information they learned during the unit.

Notes

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5. Cartwright, Frederick. *Disease and History*. New York: Thomas Crowell Company, 1972.
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10. Fenn, Elizabeth. "The Great Smallpox Epidemic of 1775-82." *History Today*, August 2003: 10-17
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21. Civil War Home, "Some of the Drug Conditions During the War Between the States, 1861-5." <http://www.civilwarhome.com/drugsshsp.htm> (accessed July 20, 2010).
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26. Macceca, Stephanie. *Reading Strategies for Social Studies*. Shell Educational Publishing. 2007.
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Armelagos, George, Peter Brown, and Bethany Turner. "Evolutionary, historical, and policital economic perspectives on health and disease." *Social Science & Medicine*, 2005: 755-765.

Cartwright, Frederick. *Disease and History*. New York: Thomas Crowell Company, 1972. I read this book to gain insight on syphilis and the impact of infectious diseases.

Civil War Home, "Caring for the Men: The History of Civil War Medicine", <http://www.civilwarhome.com/medicinedhistory.htm> (accessed July 20, 2010) This website contains information explaining why the men were easily infected with diseases.

Civil War Home, "Medical Care, Battle Wounds, and Disease" <http://www.civilwarhome.com/civilwarmedicine.htm> (accessed July 20, 2010) This website contains information explaining the statistics of the dead by comparing medical and battle wounds.

Civil War Home, "Some of the Drug Conditions During the War Between the States, 1861-5." <http://www.civilwarhome.com/drugsshsp.htm> (accessed July 20, 2010). This website contains information explaining the drugs used to treat diseases during the Civil War.

Civil War Journal. 1993. This is a 6 part documentary series illustrating the events during the American Civil War.

Fenn, Elizabeth. "The Great Smallpox Epidemic of 1775-82." *History Today*, August 2003: 10-17. This article presents information on the history of smallpox.

Gettysburg. 1993. This movie is based upon the book *Killer Angels*. The film will show Civil War re-enactors recreating what happened durng the Battle of Gettysburg.

Glory. 1989. This film shows the events that the first black union regiment endured during the Civil War.

Lee, Chulhee. 2009. Socioeconomic differences in the Health of Black Union Soldiers during the American Civil War. *Social Science History*. 33:4. 427-457. This article examines the disparities bewteen black soliders in terms disease and occupations.

Marmorstein, Jerome. *War As a Disease Epidemic*. July 2001. This article focused on diseases during war and how they caused more deaths than bullets.

Oldstone, Michael. *Viruses, Plagues and History*. New York: Oxford University Press, 1998. I read this book to learn about the impact of viruses, plagues and history.

Rifkind, David, and Geraldine Freeman. *The Nobel Prize Winning Discoveries in Infectious Diseases*. San Diego: Elsevier Academic Press, 2005. I read this book to learn more about tuberculosis and syphilis.

Sachs, Jessica. *Good Germs, Bad Germs: Health and Survival in a Bacterial World*. New York: Hill and Wang, 2007. This book summarized the effects of germs on the Civil War.

Weissfeld, Alice. "Infectious Diseases and Famous People Who Succumbed to Them." *Clinical Microbiology Newsletter*, November 15, 2009: 169-172. This was an interesting article that summarized infectious diseases and listed famous historical individuals who died from the diseases.

Annotated Bibliography for Students

Bauer, Patricia. *B is for Battle Cry: A Civil War Alphabet*. Sleeping Press. 2009. This is a children's book that goes through every letter of the alphabet describing an aspect of the Civil War.

Dobson, Mary. *Wartime Whiffs (Smelly Old History)*. Oxford University Press. 1999. This is a children's book that allows children to scratch and sniff historical conflicts.

Lyons, Mary. *Dear Ellen Bee: A Civil War Scrapbook of Two Union Spies*. Scholastic. 2001. This is a children's book filled with letters, newspaper clippings and photographs that tell the story of the Civil War from the perspective of the spies.

Massie, Elizabeth. *1863: A House Divided: A Novel of the Civil War*. Torteen. 2000. This novel is for students who read on and above the 5th grade. The war has been going on for two years and a young boy is frustrated with farm life and may have gotten in over his head when he joins the Union.

McPherson, James. *Fields of Fury: The American Civil War*. 2002. This is a children's book that summaries each battle of the Civil War with maps, photographs and other illustrations.

Ollhoff, Jim. *History of Germs: Smallpox*. ABDO Publishing. 2010. This is a children's book that gives a history of smallpox, symptoms and a introduction of the smallpox vaccine.

Polacco, Patricia. *Pink and Say*. Penguin Group. 1994. This is a children's book that tells the story of a white Confederate soldier who falls behind due to an illness and a black Union soldier attempts to nurse him back to health.

Shaara, Michael. *Killer Angels*. Random House. 2003. This novel is for students who read on and above the 8th grade. This novel gives a detailed account of the Battle of Gettysburg.

Appendix Implementing District Standards

The North Carolina Standard Course of Study Objectives for Language Arts, Science and Social Studies are addressed in the first paragraph before each activity. The district encourages teachers to write the state standards in student friendly language so they understand what is expected before, during and after the lesson is complete. Additionally, it also cultivates connections and retention of academic concepts between daily lessons. When the administrative team enters the classroom and questions a student about what they are working on; they want to hear and see the connection between what is written on the board (the North Carolina Standard Course of Study Objectives) and the student's response.

Science Objectives

7.02 The learner will describe diseases caused by microscopic biological hazards.

7.03 The learner will analyze data to determine trends or patterns on how infectious diseases may spread.

7.04 The learner will explain the effects of environmental influences on human growth and development.

Language Arts Objectives

1.02 The learner will respond to expressive material that is heard, read or viewed by making connections, drawing conclusions, constructing media reviews and making inferences.

5.01 The learner will increase fluency, comprehension and insight through a meaningful and comprehensive literacy program.

Social Studies Objectives

4.01 The learner will identify and analyze the significance of the causes of the South's succession from the Union and compare reactions to other regions of the nation.

4.02 The learner will describe the political and military developments of the Civil War and analyze their effects on the outcome of the war.

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