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EDTEP 551: Lesson Plan

“The Subjectivity of Science and the Eugenics Movement”

10<sup>th</sup> grade biology

## **Part 1: Lesson Plan Rationale**

During my two week observational experience I was placed at a highly diverse high school in west Seattle. The racial make-up of the school was approximately 3% American Indian, 26% Asian, 17% African American, 23% Latino, and 30% Caucasian. Fifty-one percent of the students were on free or reduced lunch. Many of the students were homeless or living with friends, and some had children of their own at home. Students came to school each day with far more experience and maturity about the realities of life than most students in a more affluent neighborhood might. And while high racial diversity at a school is by no means a guarantee that multicultural educational practices will be in use, fortunately many were at this particular high school. Throughout the school one could find programs designed to help second language learners who were struggling in their classes and programs designed to promote interracial activities. The staff had made a strong commitment to reducing racism and promoting equality in the school. Matters of racism and prejudice were dealt with seriously and any acts of active racism were considered grounds for expulsion. In my opinion, this high school had an empowering school culture and social structure.

Still, one can easily find moments in the school environment and during instruction where implementing multicultural education techniques could be highly effective. In the science classrooms it is often initially difficult to see where one might use multicultural education. Content integration, from what I observed, seemed to be most teachers' choice, probably because it is the easiest. For example, many of the science teachers had posters on the walls portraying the various scientific achievements of people of color and women. One teacher was teaching about the sun's effect on skin cancer. She added some data from the American Cancer Society to

show the relative occurrences of skin cancer in Whites and African Americans. Nicely, she pointed out that while the statistics were interesting to look at, they were leaving out a large part of the United State's population, such as Asians, Latinos, Native Americans, etc.

Yet to me the multicultural teachable moments I noticed were not in reference to where to add more content integration. I was noticing a vital component missing from much of the science curriculum. This vital component was relevance. Much of what the teachers were talking about did not relate to the lives of the students. So often I heard comments like, "Science is so boring," and "When am I ever going to use this in my life?" Students were lacking a connection to the material. For example, in a lesson about animal cells, the teacher began with a fun activity analogous to the TV. show "Survivor." The only problem was when she asked her students how many of them were familiar with the television show and only two people raised their hands. Obviously, this was not a relevant topic for most of the class. The next day of lessons was lacking in equity pedagogy. The teacher lectured from the front of the room, requesting that students call out answers from their seats. According to my notes, boys' answers were acknowledged 66% more often than girls' answers. Additionally, many quiet students did not participate at all. Finally, students were seeing science as completely separate from their other classes. To them, science did not fit into the real world and unless they were planning on going into a science field as a career, they were simply present to get their credit.

The idea for my lesson plan came from the weekly homework assignments given to the 10<sup>th</sup> grade biology students. Each student was to find an article about science in the newspaper or online and to write a summary about what they had learned from the article. When students would ask the teacher if their articles were appropriate, the teacher would ask whether scientific

vocabulary was used, if specific genes were mentioned, if it was based on work done by real scientists, etc. The teacher seemed to think that these were all criteria for making the article valid and worthy of learning, essentially true. When I heard this I immediately thought of the eugenics movement around the turn of the century. In that situation science was used as evidence to prove something that wasn't true. Real scientists were involved, supposed genes were found and the movement was filled with scientific vocabulary. Yet now, most scientists laugh that anyone could have been so misled. But students today need to realize that science is not completely objective. Certain studies get funded and others do not. Who benefits from this? Certain pieces of evidence are used over others. Who decides which evidence to report and for whose benefit? Granted, as a teacher with this same homework assignment, I certainly wouldn't want my students to think that science was completely made-up at the whims of those in power, but I would want them to keep these issues in mind as they read science articles in the news and in their textbooks. That is why I have decided to design a lesson plan to show students that science can be improperly used to falsely support social injustices and that as knowledgeable citizens they should keep this in mind as they do their homework assignments and evaluate social issues.

## **Part 2: Lesson Plan**

### **“Science and the Eugenics Movement”**

**Objectives:** 1. Students will understand the social reasoning behind the eugenics movement.  
2. Students will be able to recognize the subjectivity of science.  
3. Students will evaluate scientific evidence with a critical lens.

**Time Required:** ~ 5-8 days

**Materials Needed:** handouts with Carrie Buck’s story (see below), access to library and computer lab, art supplies for making presentation projects

#### **Background:**

This lesson will follow a unit on genetics so that students will have genetic knowledge to be able to understand the “science” of the eugenics movement. They will have studied how genes are inherited, how genes lead to physical and behavioral characteristics and will have examined the nature vs. nurture debate in regards to human behavior.

#### **Procedure:**

1. Have students brainstorm about traits that are inherited and traits that are environmentally acquired. Also, have them generate a list of traits they are unsure of. Make a chart with these 3 categories on the board and fill in their responses as given.
2. Have students break into groups of 3 or 4 (they will keep these groups throughout the activity). Ask them to spend ~5 minutes discussing why they think some traits are genetic and some are not and any evidence they have from their personal experiences to support their claims.
3. Discuss the groups’ conclusions as an entire class. (~5 minutes)
4. Give a brief account of the eugenics movement. (Be sure to field any questions from students as they arise)
  - a. Began after the civil war; remnants remained until civil rights movement in the 1960’s and even into today.

- b. Based on racism; many white people believed the Anglo-Saxon race was superior and wanted to prevent it from dying out
    - i. People of color and immigrants were reproducing at a higher rate
    - ii. Immigrants from southern (mostly Italian) and eastern (mostly Jewish) Europe were entering the U.S. in high numbers
    - iii. Working class people were organizing themselves and protesting the labor conditions of the time. Elitists felt threatened.
  - c. An effort to use science to support a social agenda. Reported that certain peoples (the feeble-minded, criminals, disabled, mentally ill, inferior types, degenerates, sexually promiscuous, etc.) had bad “germ-plasm” (genes) that needed to be removed from the gene pool.
  - d. Led to many laws such as interracial marriage laws, sterilization laws, and immigration laws.
5. Pass out to the class the story of Carrie Buck. (see attached page) Give them time to read it. Ask students to write their first impressions about reading the story in their notebooks. Then ask them to write how they might have felt reading this story if they had been a poor immigrant at this time in history. (~10 minutes)
6. Explain the project to be accomplished over the next few days.
- a. Pretend that Carrie Buck has come to you and asked you to represent her in her trial. As a group you are to come up with a defense for Carrie. In it you should address the scientific, political, and social aspects of her case. Use evidence to discredit the claims of the eugenicists.
  - b. We will be spending the next couple of days in the library and computer lab gathering evidence for your cases.  
A helpful website: <http://www.eugenicsarchive.org/eugenics/> (It has extensive information about the movement and several essays and documents you may want to use.)
  - c. You can present your findings and claims in whatever fashion you choose. Some ideas might be: poster, drama, debate, short story, essay, artistic representation, song, etc. Please be sure to run your presentation idea by me before you start.
  - d. Remember... you must include a case against the SCIENCE involved in Carrie’s case. In other words, how and why is the science involved in the movement biased, misrepresented, and inaccurate? Who does this “science” benefit? What science would benefit Carrie?
  - e. ALL MEMBERS OF THE GROUP MUST PARTICIPATE!!!
7. Students will spend the next couple of days researching evidence as a group. Then they will have ~2 days to create their presentation, followed by 1-2 days of presenting. The last day will follow with a discussion of how and why science is not objective and instead, like all subjects in school, is a product of culture. Additionally, we will discuss

remnants of eugenics that are still evident in our society (such as funding going to study diseases primarily affecting White people).

### *Carrie's Story*

By 1924, approximately 3,000 people had been involuntarily sterilized in America; the vast majority (2,500) in California. That year Virginia passed a Eugenic Sterilization Act based on Laughlin's Model Law. It was adopted as part of a cost-saving strategy to relieve the tax burden in a state where public facilities for the "insane" and "feeble-minded" had experienced rapid growth. The law was also written to protect physicians who performed sterilizing operations from malpractice lawsuits. Virginia's law asserted that "heredity plays an important part in the transmission of insanity, idiocy, imbecility, epilepsy and crime..." It focused on "defective persons" whose reproduction represented "a menace to society."

Carrie Buck, a seventeen-year-old girl from Charlottesville, Virginia, was picked as the first person to be sterilized. Carrie had a child, but was not married. Her mother Emma was already a resident at an asylum, the Virginia Colony for the Epileptic and the Feeble-minded. Officials at the Virginia Colony said that Carrie and her mother shared the hereditary traits of "feeble-mindedness" and sexually promiscuity. To those who believed that such traits were genetically transmitted, Carrie fit the law's description as a "probable potential parent of socially inadequate offspring." A legal challenge was arranged on Carrie's behalf to test the constitutional validity of the law.

At her trial, several witnesses offered evidence of Carrie's inherited "defects" and those of her mother Emma. Colony Superintendent Dr. Albert Priddy testified that Emma Buck had "a record of immorality, prostitution, untruthfulness and syphilis." His opinion of the Buck family more generally was: "These people belong to the shiftless, ignorant, and worthless class of anti-social whites of the South." Although Harry Laughlin never met Carrie, he sent a written deposition echoing Priddy's conclusions about Carrie's "feeble-mindedness" and "moral delinquency."

Sociologist Arthur Estabrook, of the Eugenics Record Office, traveled to Virginia to testify against Carrie. He and a Red Cross nurse examined Carrie's baby Vivian and concluded that she was "below average" and "not quite normal." Relying on these comments, the judge concluded that Carrie should be sterilized to prevent the birth of other "defective" children.

The decision was appealed to United States Supreme Court. Justice Oliver Wendell Holmes Jr., himself a student of eugenics, wrote the formal opinion for the Court in the case of *Buck v. Bell* (1927). His opinion repeated the "facts" in Carrie's case, concluding that a "deficient" mother, daughter, and granddaughter justified the need for sterilization. The decision includes the now infamous words: It is better for all the world, if instead of waiting to execute degenerate offspring for crime or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind... Three generations of imbeciles are enough.

Recent scholarship has shown that Carrie Buck's sterilization was based on a false "diagnosis" and her defense lawyer conspired with the lawyer for the Virginia Colony to guarantee that the sterilization law would be upheld in court. Carrie's illegitimate child was not the result of promiscuity; she had been raped by a relative of her foster parents. School records also prove that Vivian was not "feeble-minded." Her 1st

grade report card showed that Vivian was a solid "B" student, received an "A" in department, and had been on the honor roll.

Nevertheless, *Buck v. Bell* supplied a precedent for the eventual sterilization of approximately 8,300 Virginians. Borrowing from Laughlin's Model Law, the German Nazi government adopted a law in 1933 that provided the legal basis for sterilizing more than 350,000 people. Laughlin proudly published a translation of the German Law for the Prevention of Defective Progeny in *The Eugenical News*. In 1936, Laughlin was awarded an honorary degree from the University of Heidelberg as a tribute for his work in "the science of racial cleansing."

The *Buck v. Bell* precedent allowing sterilization of the so-called "feebleminded" has never been overruled.

### **Part 3: Reflections**

I am excited about this lesson plan as I think it tries to accomplish many things. First, I feel that it addresses a social injustice that is still pervading our society although in less obvious forms than in the early to mid 1900's. Second, it addresses how science can be skewed and statistics misrepresented in order to support and supposedly justify a social agenda. I want students to learn to be skeptical about scientific results and to look at who the results are benefiting. Third, this lesson fulfills several of the Washington state science standards for 9<sup>th</sup> and 10<sup>th</sup> graders.

1. Analyze and explain why curiosity, honesty, openness, and skepticism are integral to scientific inquiry (EALR 3.1.1).
2. Identify and evaluate factors that limit the extent of a scientific investigation (EALR 3.1.2).
3. Compare, contrast, and critique divergent results from scientific investigations based on scientific arguments and explanations (EALR 3.1.3).
4. Analyze and evaluate the quality and standards of investigative designs, processes, and procedures (EALR 3.1.4).

This lesson fulfills these standards using multicultural education through content integration (shows the history of the plight of subordinate groups), knowledge construction process (points out how biases in science affect the evidence reported and therefore conclusions drawn), prejudice reduction (shows the lack of genetic evidence to report inferiority in subordinate groups), and equity pedagogy (asks students to draw on their personal experiences and



encourages collaborative learning with multiple modes of presentation possible). Finally, this lesson is about eugenics, a major part of scientific history that is rarely taught. It is an issue where science and society are visibly linked and shows students that science is far from being separate from the real world.

Of course, I still have questions and concerns regarding the lesson. Logistically, my first concern is that not all students will participate. Even though I have them working in groups, how will I make sure one or two particular students in each group don't take over? I also have uncertainties that students will understand the depth of information they should provide in their presentations. I suppose this would become evident through the course of designing the presentations and I would deal with the issues as they arose. Additionally, I'm sure there are many glitches in the flow of the lesson or other questions that I could ask to narrow or broaden the students' thinking. These will only be evident as I try the lesson. The most important part is to constantly reflect and revise as necessary.

On a broader scale, I worry that, somewhat like the eugenicists, students will try to categorize every trait as either completely genetic or completely defined by the environment. I want to make sure they realize there *are* genetic differences between the races but the fact that these differences are labeled inferior or superior is socially constructed. I don't want them to get the idea that humans are all the same or that we should not recognize differences. I also do not want the students to simply pity those who suffered under eugenics. I want them to recognize the injustice and not just say, "Oh well. That was a really bad thing to do. I feel sorry for those people, but it's over now though." I'm not sure how to keep the students from *only* pitying the victims.

Most importantly, I'm eager to try this activity. Eventually I would like to combine this activity with homework assignments like the ones described in part 1. I would ask the students to think back to this lesson and resultant discussion and to collect and analyze newspaper and online articles in light of what they had learned.

#### **Part 4: Resources**

##### Web Resources:

- Mix It Up Program: facilitating dialogue about socio-economics in the classroom  
<http://www.tolerance.org/teach/respond/teens/dialogues.jsp>
- National Law Center on Homelessness and Poverty (NLCHP): the organization that monitors and enforces the laws that protect the educational rights of homeless youth  
[http://www.nlchp.org/FA\\_Education/](http://www.nlchp.org/FA_Education/)
- National Coalition for the Homeless (a British organization): provides advice on how to deal with many of the issues faced by poor or homeless children  
<http://www.nch.org.uk>
- A checklist for inclusive curriculum: this website is from a school in Australia but could be adapted for any school  
<http://www.flinders.edu.au/teach/teach/inclusive/checklist.htm>
- National Center for Educational Statistics: shows statistics from national standardized tests; shows progress of students from low socio-economic classes; good evidence for why this should be an issue in schools  
<http://nces.ed.gov>

##### Articles/Books:

- Title: Teaching the Poor and Children of Color  
Author: Thomas J. Brown  
Publisher: Brown & Assocs; (January 7, 1999)
- Title: Framework for Understanding Poverty  
Author: Ruby K. Payne  
Publisher: aha! Process Inc.; Revised edition (2001)
- Preparing for Success : Meeting the Language and Learning Needs of Young Children from Poverty Homes  
Author: Carolyn Weiner  
Publisher: ECL Publications; (June 11, 2001)
- Title: Teaching and learning mathematics in poor communities: a report to the Board of Directors of the National Council of Teachers of Mathematics  
URL: <http://www.nctm.org/about/committees/rac/tfpc/>  
Publisher: National Council of Teachers of Mathematics (NCTM), 1999
- Title: Ain't No Makin' It: Aspirations and Attainment in a Low-Income Neighborhood  
Author: Jay MacLeod  
Publisher: Westview Press; Reprint edition (August 1995)

Suggestions for teachers:

- Spend some time in a poor neighborhood. Observe how people are occupying their time. Converse with the people.
- Read books written by people from the poor and working class. What are some of their experiences?
- LISTEN to your students. Care about them and their lives. Learn from them.
- Go to the websites listed above or read the books. Learn from them.
- Teach about the scientific and social implications of medical issues among the poor and working class (ex. low birth weight, lack of medical care, etc.).

- Use examples in your classroom that are relevant to more than the middle-class students.
- Have people from the working class talk to your class about how they use science in their daily lives (ex. physics of construction work, etc.).