Diversity and Inclusion in the Science Classroom

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Presentation Time: 11:00 a.m.
A Diversity, Epidemiology and social justice unit was incorporated into the Physiology and Disease curriculum in Fall 2016. Students discussed topics such as social and cultural influences on diversity thinking, and selective treatment in hospitals based on race. It was very noteworthy that students were united in their thinking regarding diversity and inclusion, despite the fact that they were from different backgrounds and diverse cultures. In 2017, additional discussions were held on equity in education. Students who were otherwise reserved were encouraged enough to express their views, and everyone appreciated the fact that they had been included.
Humans are by nature egocentric and socio centric as well. We believe that the groups we belong to are right, privileged, special. We systematically deceive ourselves into thinking that we are right, we avoid recognizing our biases and treat people and groups without due consideration and respect, even when there is clear evidence to refute our point of view. (Elder, 2004).

Through this unit, I hope to teach students to be aware of, and to guard against, their native egocentric and socio centric tendencies. Otherwise these tendencies will keep them from reasoning well through diversity issues.
Students at the Illinois Mathematics and Science Academy are selected for their aptitude in Math and Science.

- Perception of inequality and exclusion among gifted population
- Promote awareness of natural egocentric and socio centric tendencies
- Reason unbiasedly through diversity issues
A Diversity, Epidemiology and social justice unit was incorporated into the Physiology and Disease curriculum in Fall 2016

PAD is a Biology elective for juniors and seniors at IMSA that deals with changes in homeostasis in the human body and its outcomes, as well as pathophysiology of disease formation.

The diversity unit was integrated into the nervous system unit because this seemed to be the best fit in the curriculum.
Students were given diversity topics and were provided with an introduction, rationale, recent events and a list of readings for these topics.

They were required to synthesize the information with recent events and create a short presentation building specific case studies for discussion with their peers.

Emphasis was placed upon discussions dissecting the ethics and moral dilemmas of recent events in the light of the background provided.
Incorporating Diversity Curriculum

- Two sections of 20 students each were provided with background information and asked to present to each other during the 100 minute class.

- Students brought up many interesting views but were united in their thinking.

- This was very noteworthy considering the fact that they were all from different backgrounds and diverse cultures.
Some of the topics discussed included:
- Brain preferences in terms of diversity
- Social and cultural influences on Diversity Thinking
- Diversity Development in the Brain
- Early development of diversity thinking
- Social justice and epidemiology and
- Selective Treatment in Hospitals Based on Race
Student Reflections on Diversity Discussions

- Students independently incorporated cases of social injustice against people of color into every single topic discussed.

- Students discussed causes for social injustice such as disparity in income, lack of education, and lack of tolerance toward people of other races.

- An interesting case study discussed was that of identical twins brought up in different environments, one tolerant and the other not tolerant toward people of color, and following their path through adolescence and adulthood.

- Their discussions brought forth many aspects of diversity that enhanced their learning by integrating real life experiences.
History of Diversity in Physiology

- In Fall 2017, students were introduced to additional diversity awareness through the development of the history of physiology and medicine.

- Special emphasis was placed upon social, racial and gender barriers.

- Students presented information from scholarly papers provided to them to set the background.

- They then discussed the situations presented and took sides voicing their opinions.
Whys is this photograph significant?
First Women Physicians in World History

October 10, 1885
Dr. Anandabai Joshee, Serampore, India
Dr. Kei Okami, Tokio, Japan
Dr. Tabet M. Islambooly, Damascus, Syria

https://s-i.huffpost.com/gen/1072427/images/o-WOMEN-DOCTORS-1885-facebook.jpg
Firsts in History

- Three women, each the first woman from their respective country to graduate with a medical degree, made history when graduating from the Women’s Medical College of Pennsylvania in 1886.
- What were the circumstances that led to these historic events?
- How has diversity impeded or enhanced medical education?
Recognize this photograph?

School Segregation Banned, the Topeka State Journal. Courtesy Kansas State Historical Society

State Journal

SCHOOL SEGREGATION BANNED

Supreme Court Refutes Doctrine of Separate but Equal Education

High Tribunal Fails to Specify When Practice of Dual Schools Must Be Dropped by States

Washington, May 17 CFS.--The Supreme court ruled unanimously Monday that segregation of Negro and white students in public schools is unconstitutional. That it said will bear further arguments this fall on how and when to end the practice. Thus many months—

Court Ruling Hailed

Segregation Already Ending

School Officials

Oliver L. Brown, et al. vs Board of Education of Topeka, Kansas, United States Supreme Court, May 17, 1954.

Turnpike Bonds

Today, education is perhaps the most important function of state and local government. Compulsory school attendance laws and the great expenditures for education both demonstrate our recognition of the importance of education to our democratic society. We conclude that in the field of public education, the doctrine of 'separate but equal' has no place. Separate educational facilities are inherently unequal.
School Segregation Banned, the Topeka State Journal. Courtesy Kansas State Historical Society

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Education has always been a privilege. Most of us do not realize this.

Opposition to the implementation of diversity and social equality has littered history.

The Brown vs Board of Education (1954) is an example of protests to remove impediments to education.
Who is this?
Selma to Montgomery March, 1965

Civil rights were not always available to all. This is hard to fathom under present day circumstances.

There has always been severe opposition to the implementation of social equality.

The Selma to Montgomery March (1965) is an example of protests to remove impediments to civil rights.
Many modern inventions and improvements were conceived under circumstances that included dire poverty and social inequality.

Examples are:
- George Washington Carver (peanut farmer and inventor)
- Otis Boykin (constructed resistor and control unit for pacemaker) and
- Garrett Morgan (invented a breathing device, hair straightener and automated traffic signal, also famous for his heroic rescue of workers trapped in a water intake tunnel in 1916, 50 feet below Lake Erie)
Why History?

- It would greatly benefit our students to be aware of the diversity, or lack thereof, of the times when these inventions and discoveries were made.

- They can appreciate better the circumstances of these discoveries and their modernization.
What Will Students Do?

- Students will focus on specific events in the history of education and medicine and lead short discussions on
  - the ethics of the decisions made
  - the modern reaction to these events and
  - how knowledge of these events might improve their education and social awareness of justice and equality
Next Steps

- The success of this project has set the stage for development of diversity curriculum for other disciplines and other schools in the state of Illinois.

- The ease of inserting this unit into an advanced biology course is encouraging and suggests that incorporation into other disciplines should be a smooth transition.

- Students greatly benefit by relating to and thinking about diversity with respect to their learning.

- Steps are under way to further develop this curriculum and train other educators to do the same in their academic institutions.
Next Steps

- Steps are under way to include curriculum on LGBTQ1+ awareness
- Work is under way to document these classroom experiences in a publication