

Lesson Unit

Written by: Dr. Katherine Schilling and Madelyn Maldonado (Spring 2023)

TITLE: Humans and Race: The Biology of Human Skin Color

TOPIC: The Biology of Human Skin Color and the Misunderstanding of Race as a Biological Construct

DESCRIPTION: This lesson is meant for an introductory high school biology course and should be taught after the unit on genetics but during the unit on evolution (specifically human evolution). It could also be discussed in a moral theology class, as it relates to the oppression of people based on their “race.” It should take between 2 or 3 50-minute classes to complete.

ESSENTIAL QUESTIONS:

1. How has skin color evolved in *Homo sapiens* over the last 200,000 years? Why is there so much variation in skin color, despite humans not being genetically diverse as a species overall?
2. Is using race as a way to identify people helpful or harmful? What does Catholic Social Teaching inform us about race and racism?

The KNOWLEDGE that students participating in our lesson will gain is:

1. Explain how evolution led to skin color differences in *Homo sapiens* without also causing large differences in genetic diversity; dismantle preconceived notions of how skin color evolved.
2. Identify the correlation between vitamin D production and folic acid levels to reproductive success in humans.
3. Identify that race is a social construct created out of a misunderstanding of how differences in skin color developed.
4. Emphasize that the value of the human person does not change based on skin color.

The SKILLS that students participating in our lesson will gain will be:

1. Synthesizing from videos and readings our most current understanding of how skin color evolved.

2. Determining which factors have the most scientific evidence for influencing skin color.
3. Differentiating between correlation and causation for skin color.
4. Using Catholic Social Teaching to inform their conversations about race and racism.

OUR METHOD IS BELOW:

Day 1

1. Bellringer: Administer Pre-test (5-7 minutes)
2. Inquiry Activity (20 minutes) (Purpose is to help students realize that discrimination based on a genetic trait like skin color or eye color is ridiculous and harmful.)
 - a. Materials: Each student needs a copy of Worksheet 1: “Video & Discussion Notes” to use for taking notes during the video.
 - b. Watch the Jane Elliot experiment - VIDEO 1 (discrimination based on eye color) starting at minute 7:00 and stopping at minute 20:00.
 - c. Facilitate a brief sharing of student observations. (Two to three students can share)
3. Small group discussion (3-4 students) (20 minutes maximum)
 - a. Materials: Each student continues to use their copy of Worksheet 1 and now needs a copy of Handout 1: “Catholic Social Teaching and Racism”.
 - b. Students should read the article using an appropriate reading strategy for your class (silent reading, popcorn, or round style are all appropriate).
 - c. Have students write down on the worksheet what information is most important from the handout, selecting three main ideas.
 - d. Have a representative from each group share what was discussed. The teacher should record and clarify ideas at the front of the room.
4. While setting up the video, encourage students to answer “Where do you think the variety/diversity of human skin colors come from?” on the back of Worksheet 1.
5. Start watching the video, “The Biology of Skin Color,” either finish or re-watch for homework. (19 minutes total)
 - a. Materials: Each student needs a copy of Worksheet 2: “The Biology of Skin Color: Film Guide Student Handout” to use for recording information from the video.
 - b. Before watching the video students should work as a group and divide up the responsibility of answering the questions.

- i. We recommend that students divide up the questions #1-6, 7-10, 11-14, 15-17. This will speed up activities on Day 2.
 - c. Students should answer the questions either while watching the video in class and/or at home when they access the video outside of class.
 - d. NOTE: for those schools who do not assign homework, this can be accomplished on Day 2 (keeping in mind the entire lesson will now take up 3 class periods).
6. Homework Assignment: All students should answer the questions they are responsible for and be prepared for a whole class discussion.

Day 2

1. Begin by checking all students have completed their assignments. (3 minutes)
 - a. If you want to assign a point value for completing the work as expected 3-5 points could be reasonable.
2. Students should re-group, but this time with peers who shared the same set of questions they completed, ie. all students who were responsible for #1-6 sit together. (5-8 minutes)
 - a. While in these groups, they should compare answers and make improvements with a different color pen than was initially used.
3. At the end of the time period, a whole class discussion should occur to ensure that the best answers are gathered. (20-25 minutes)
 - a. Each group could have a spokesperson share the newly improved answers, and teacher input for further improvements should take place. Please use the provided answer key that accompanies “The Biology of Skin Color” video.
 - b. At the end of the discussion, make sure each student has access to the student generated answers, because this handout should be treated as ‘notes’.
4. With the remaining time, watch the “Race is a Social Construct: QED with Dr. Brown” video (10-15 minutes).
 - a. Materials: Each student should continue to use Worksheet 1 “Video & Discussion Notes” to record information gained from the video.
 - b. Students should answer the prompts on the worksheet.
 - c. A brief class discussion of the information should follow and help students connect all of the information that they have been exposed to.

Day 3

1. Watch video “Humans & Race: Exploring the intersections of science and racism”
 - a. No need to take notes, this is meant as a wrap-up moment.
2. Administer Post-test assessment to students (5 minutes).

- a. Note: Make sure all pre-test and post-test data is sent to Heather Foucault-Camm at hfoucaul@nd.edu.

Our ASSESSMENT SECTION will include the following

Day 1

1. Pre-test assessment
2. Formative - Small group discussion using Worksheet 1's guiding questions.

Day 2

3. Summative - (If checked for completion and points are awarded for effort) - Worksheet for "Biology of Skin Color" video
4. Formative - Small group and whole class discussion comparing answers for "Biology of Skin Color" questions.
5. Formative - Whole class discussion on "Race is a Social Construct: QED with Dr. Brown."

Day 3

6. Post-test assessment

Resources for Lesson Plan:

- [PRE-TEST](#)
- [WS 1: Video & Discussion Notes](#)
- [VIDEO 1: Eye of the Storm - NPR story on Jane Elliott's experiment](#)
- [HNNT 1: Catholic Social Teaching and Racism](#)
- [VIDEO 2: The Biology of Skin Color — HHMI BioInteractive Video](#)
- [WS 2: Film Guide Student Handout](#)
 - [Film Guide Educator Materials](#) - includes answer key for worksheet
- [VIDEO 3: Race is a Social Construct](#)
- [VIDEO 4: Humans and Race - AAAS - DoSER](#)
- [POST-TEST](#)

Additional Resources:

- [Hirschman, 2004, The origins and demise of the concept of race](#)
- [Jane Elliott interview](#)

- [Evolution & Religion - Are We Asking the Wrong Questions? - AAAS - DoSER](#)
- [To Be Human: Genetics, Origins, and Identity - AAAS - DoSER](#)
- [How Did Humans Become Human? Becoming Human: Parts 1 & 2 - AAAS - DoSER](#) - may not use (related to bigger picture of what it means to be human, but doesn't mention race/skin color)
- [Color Me Human: Biology & Genetics Science Activity](#) *“As skin color is intimately connected to social constructions of race, this Snack may be best prefaced with a classroom discussion about race, and whether it is a good way to describe human variation. Biologists largely agree that there is no biological basis for racial groups—that is, that “races” do not describe biologically meaningful groups, that traits society often links to race are nearly all complex, and that human variation in these traits occurs along a seamless continuum that does not show many natural divisions. Depending on the racial and phenotypic diversity of your students, they may find through this Snack that skin color can vary hugely within a group, and discover for themselves that skin color is not as tightly linked to socially determined races as they may previously have thought.”*
- Different terms to be clear on
 - Race - **Race** is a categorization of [humans](#) based on shared physical or social qualities into groups generally viewed as distinct within a given [society](#).^[1] The term came into common usage during the 16th century, when it was used to refer to groups of various kinds, including those characterized by close [kinship](#) relations.^[2] By the 17th century, the term began to refer to physical ([phenotypical](#)) traits, and then later to [national](#) affiliations. Modern [science](#) regards race as a [social construct](#), an [identity](#) which is assigned based on rules made by society.^{[3][4]} While partly based on physical similarities within groups, race does not have an inherent physical or biological meaning.^{[1][5][6]} The concept of race is foundational to [racism](#), the belief that humans can be divided based on the superiority of one race over another.
 - Ethnicity - An **ethnicity** or **ethnic group** is a grouping of [people](#) who [identify](#) with each other on the basis of perceived shared attributes that distinguish them from other groups. Those attributes can include common sets of traditions, ancestry, language, history, society, nation, religion, or social treatment within their residing area.^{[1][2]} The term ethnicity is often used interchangeably with the term [nation](#), particularly in cases of [ethnic nationalism](#).