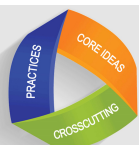


Enhancement versus Treatment

Human Enhancement and Transhumanism



NGSS Instructional Outcomes

Next Generation Science Standards

Science and Engineering Practices

Asking Questions and Defining Problems: Students explore and define the distinction between enhancement and treatment in the context of human enhancement.

Engaging in Argument from Evidence: Debating whether certain biomedical interventions fall under treatment or enhancement requires students to use evidence and reasoning.

Crosscutting Concepts

Cause and Effect: Understanding the effects of biomedical interventions and their classification impacts societal norms and individual health.

Systems and System Models: Analyzing the human body as a system affected by biomedical technologies.

LS3: Heredity: Inheritance and Variation of Traits: Exploring how genetic modifications and enhancements could impact human heredity and genetic diversity.

LS4: Biological Evolution: Discussing transhumanism in the context of human evolution and the potential for future human development.

ETS1: Engineering Design: Considering the design and ethical implications of biomedical technologies used for enhancement.



CCSS Instructional Outcomes

Common Core State Standards

CCSS.ELA-LITERACY.RST.9–10.8: Assessing the credibility of the sources (like the CNN article) and noting any discrepancies among the data or information presented.

CCSS.ELA-LITERACY.SL.9–10.1: Engaging in collaborative discussions, building on others' ideas, and expressing their own clearly and persuasively.

Mathematics Standards

Statistics and Probability: Interpreting data, such as the effects of certain biomedical interventions, and understanding the statistical norms and deviations that might apply in the context of human enhancement.

History/Social Studies Standards

CCSS.ELA-LITERACY.RH.9–10.2: Determining the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.

CCSS.ELA-LITERACY.RH.9–10.9: Comparing and contrasting treatments of the same topic in several primary and secondary sources.

Content Learning Outcomes:

- Identify key components of transhumanist ideology.
- Discern transhumanism-based narratives and elements within popular media.
- Distinguish between Islamic theological perspectives on human enhancement and its purposes and secular bio-scientific views.

Materials

- Instruction/Teacher Facilitation: Slides 4.16–4.19
- Triple-Entry Vocabulary Journal (Student responsibility)
- Supplemental Material: CNN Article: “Transhumanism: Meet the Cyborgs and Biohackers Redefining Beauty”
- Lesson 4.2 Assessment

Instruction/Teacher Facilitation: Slides for Lesson 4.2

- **Slide 4.16.** Therapy versus Enhancement
- **Slide 4.17.** Therapy versus Enhancement
- **Slide 4.18.** Summary
- **Slide 4.19.** Transhumanism: Meet the Cyborgs and Biohackers Redefining Beauty

Instruction/ Teacher Facilitation

In Lesson 4.1, we discussed the key components and ideas of transhumanism. Let us now look deeper at how changes are being made and to what extent should we benefit/improve or “change” human beings.

Slide 4.16: Therapy versus Enhancement

Therapy vs Enhancement

- Differentiation
 - Medical practice versus non-medical practice
 - Whatever doctors/allied health professionals do as licensed practitioners = therapy
 - Restoring to normal function versus augmenting function
 - If something creates equality of opportunity in society = therapy
- Treatments address maladies while enhancements target normal function
 - If improving function beyond biological function = enhancement



Three Views on Differentiation:

1. Medical practice versus non-medical practice

- Whatever doctors/allied health professionals do as licensed practitioners is considered therapy.
- Non-medical practices are not therapy; if not prescribed by a doctor or a health professional, it is not considered therapy.

2. Restoring to normal function versus augmenting function

- If something creates equality of opportunity in society = therapy.
- Whatever removes dysfunction/disability and restores normal functioning so that a person can then continue to have that equal opportunity would be considered therapy. (Restoring a species-typical function is the goal of therapy.)
- Anything more than this would be considered enhancement.

3. Treatments address maladies while enhancements target normal function/being

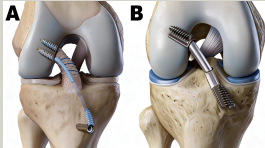
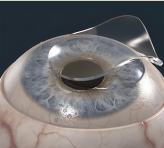
- If improving function beyond the species-specific norm of biological function = enhancement.
- For someone who is on the normal curve in their functioning and wants to be taller than that normal height; this would be an enhancement.
- Comparatively, if a person is off or below the normal curve, and they want to get back onto that normal curve, anything done in such a case would be therapy.

Slide 4.17: Therapy versus Enhancement

Therapy vs Enhancement

- **Case examples:** a 10-minute exercise

Within your groups come to consensus on whether the following is an example of therapy or enhancement and why?




Group Activity:

Enhancement versus Therapy Case Examples: Introduce these three case examples:

Case 1: Tommy John Surgery is a surgery to repair the ulnar collateral ligament (UCL), which tears due to overuse, usually in athletes that use their elbow a great deal, like pitchers. While playing for the Los Angeles Dodgers in 1974, Tommy John injured his UCL and became the first person to undergo ulnar collateral ligament (UCL) reconstruction surgery, in which a tendon from another part of the body (often from the forearm or hamstring) is taken to replace the damaged ligament in order to restore stability and function. When the surgery was successful and he returned to major league baseball, the surgery was named after him.

After surgery, in the recovery stage of the first year, people are not able to use their elbow to its full potential, like throwing the baseball as fast as they used to, but after that recovery stage, they are often able to throw the ball faster than they used to because the replacement “ligament” is stronger than the original.



Case 2: LASIK eye surgery is the most commonly performed laser refractive surgery to correct vision problems. During LASIK surgery, a special type of cutting laser is used to change the shape of the cornea. LASIK often offers improved vision without the hassle of glasses or contact lenses. In general, there is a good chance of achieving 20/40 vision or better after refractive surgery.

Case 3: NuClarity is a brain supplement that helps improve cognitive function by increasing neurotransmitter efficiency which will in turn boost memory retention, clarity, and information recall. It claims to reduce brain fog and increase cerebral blood flow.

Ask students: Within their groups to come to a consensus on whether each of these cases is an example of therapy or enhancement, and be able to explain why.

- Allot about 7–10 minutes for students to discuss and come to a conclusion within their groups.
- Have a student representative from each group report their decisions to the whole class.
- Be sure each group presents their decisions along with their reasoning as to why they came to that decision concerning each example.
- Reinforce concepts as they report back.

Therapy or Enhancement? - Explanations

Case 1: Tommy John Surgery:

Therapy: because surgery was needed to restore function. The beneficial side effect is that the surgery actually improved function more than normal. The status of the person who was subject to the therapy was someone who had a dysfunction due to the torn tendon.

Enhancement: because the ligament commonly used to replace the torn ligament is taken from the leg which is usually thicker than an arm ligament, therefore it is stronger and enhances functioning post-surgery. Also, the torn ligament is caused due to consistent stress or use on that elbow, where a person could change profession and avoid the need for this surgery. It is their desire to be a pitcher, and not a need. The normal population does not use the elbow to this degree, so the “normal” use threshold is well below this.

Case 2: LASIK Eye Surgery

Therapy: because trying to restore vision from impaired or blurred vision to clear vision.

Enhancement: because it is normal to have visual impairments as one ages, so bad eyesight is actually the norm, especially at older ages.

A Question to Consider: Why are we changing the body part, instead of changing/fixing the environmental causes of this decreased ability to see? Like the lights and types of lights that are used, the screens and their configuration that is harmful to our eyes all play a part in their deterioration.

Case 3: NuClarity

Therapy: because if a person is required to memorize and internalize facts, the brain will have information overload. But society expects you to know these things, so to attain or maintain societal expectations and do well at school/workplace, this supplement will help a person be within that expected "norm."

Enhancement: because it is being used to boost cognitive functioning, not restore or bring to a normal level from an impaired or decreased level.

Results Analysis: Students can argue either way for each of these, and the teacher should challenge their decision with the alternative to push their reasoning and allow them to see that the decision whether something is therapy or enhancement can be justified either way.

Slide 4.18: Summary

Summary

- **Transhumanism**
 - **Transitional state of human → post-human**
 - Goal is to remove human frailties
 - Utilize biotechnology to do so
 - Example activities:
 - Genetic interventions to remove "disease" and augment functionalities
 - Enhance biological form
 - Combat mortality through mind uploading; reanimation
- **Disease**
 - Definitions vary culturally and over time
 - Can be functionally-based, teleology-based, and/or subjectively based
 - Healthcare addresses these societally based "needs"
 - Enhancement versus treatment gets blurry because of it
 - There is a "normal" curve to human capacities



Transhumanism

- Transitional state of a human: moving towards a post-human
- Goal is to remove human frailties
- Utilize biotechnology to do so

Disease

- Definitions vary culturally and over time.
- Can be functionally based, teleology-based, and/or subjectively based.
- Healthcare addresses societally-based “needs”.
There is a “normal” curve to human capacities, but this is a value judgment because it can change over time.
- Enhancement versus treatment/therapy can be difficult to differentiate at times.

Slide 4.19: Transhumanism: Meet the Cyborgs and Biohackers Redefining Beauty

Transhumanism: Meet the Cyborgs and Biohackers Redefining Beauty

Instructions:

- Use the internet to lookup your assigned person from the article
- Among your group decide:
 - Enhancement or Therapy
 - As a Muslim doctor would you have helped the person? Why or why not
- Report back to entire room

Paper link:

<https://edition.cnn.com/style/article/david-vintiner-transhumanism>



CNN Article:
Transhumansim:
Meet the
Cyborgs

Group Activity

Real-Life Case Analysis

Have students read the CNN article: Karina Tsui, **“Transhumanism: Meet the Cyborgs and Biohackers Redefining Beauty,”** CNN, May 27, 2020.

Group the students and have them pick a person from this article to look up and find out more about.

OR

Group students based on the person they are interested in learning more about.



Ask students to:

- Look up the story behind the person that was chosen.
- Analyze their case in terms of concepts you learned today (Physician's responsibilities, Enhancement versus Therapy/Treatment). Would you have made those modifications to this individual as a Muslim physician? Why or why not?
- Share with the rest of the class: the case of the individual, if you would perform the procedure for the modifications, and provide reasons.