

Teaching High School Physiology Using Segments of a Popular TV Medical Drama



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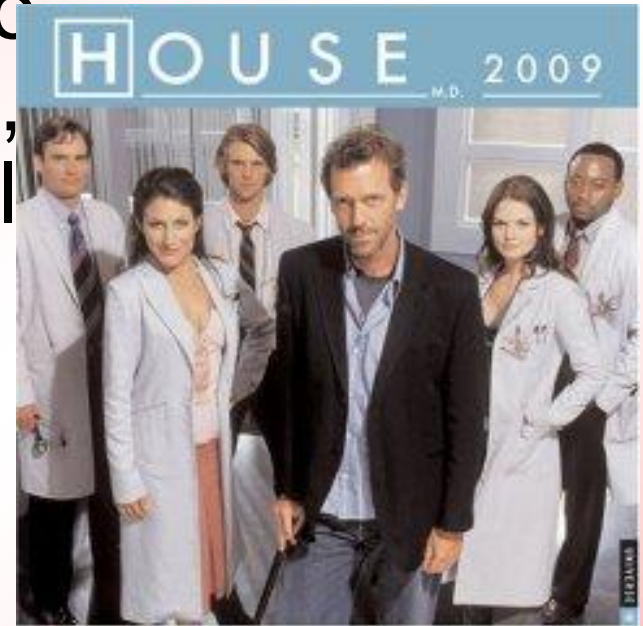
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Popular culture, in the form of TV, movies, newscasts, etc. is introducing scientific concepts to Americans on a daily basis.

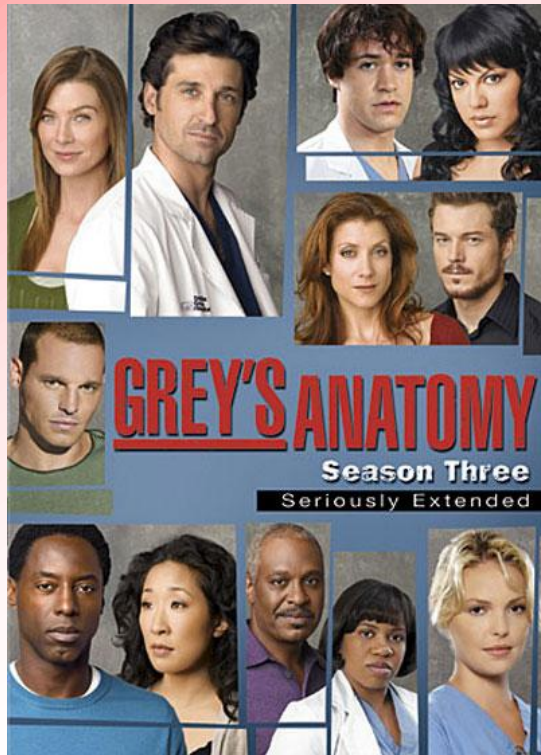


T.V. a “constant companion”

Individuals are introduced to medical jargon, procedures, human diseases & potential therapies.



Leads to naïve conceptions regarding human physiology



Are students able to differentiate between reality and fiction?

Of the 44 students surveyed:

- 59% claimed to be regular viewers of science or medical related TV programs
- 61% believed popular TV programs tend to be very accurate in scientific content
- 91% felt much of what is seen in popular medical dramas can occur in real life
- 64% felt they knew enough about science and TV to tell the difference between reality and fiction when viewing an episode.

Can student understanding of human physiology be improved through the use of multimedia resources, specifically through the use of popular television programming?



Purpose

Demonstrate how popular media can be incorporated into high school Biology curricula through the use of integrated media.

Research Design

- Control Group - spent approximately a day and a half on a textbook assignment
- Exp1 Group - watched the chosen television episode without interruption from the instructor.
- Exp2 Group - watched the chosen television episode incorporating the method of integrated media.

Integrated Media

Combining the viewing of a program with frequent pauses by the instructor in order to facilitate necessary discussions regarding content material.

How to choose the right program

1. Ability to provide relatively accurate scientific scenarios in an interesting and entertaining format with limited side stories.
2. Frequent visuals of what is occurring inside the patient's body
3. Familiarity to students

Episodes

Nervous System

"Insensitive" season 3, episode #314, first broadcast February 13, 2007

The patient of the week: Hannah Morgenthal, a teenager has CIPA (Congenital Insensitivity to Pain and Anhidrosis) so she cannot feel pain. But House thinks something is wrong and indeed she develops fever.

The mis-diagnoses: While undergoing tests, she gets a second-degree burn and develops paranoia and then her legs become numb and she falls to break bones. House later decides she has a B-12 deficiency but she just got a B-12 injection. While stealing one of Wilson's san

The final diagnosis: A 25-foot tapeworm

Episodes

<i>Immune System</i>	
<i>“Role Model”</i> season 1, episode #117, first broadcast April 12, 2005	
<i>The patient of the week:</i>	Senator Wright collapses after a campaign speech in his run for President.
<i>The mis-diagnoses:</i>	Without even seeing the patient, House declares to Vogler it is "bad sushi". But then during the evaluation, he says it is the Senator's brain. This leads to having his brain biopsied. That reveals toxoplasmosis. This leads to a diagnosis of AIDS. But when the Senator denies risky behavior, House takes the AIDS test again. When this time it comes back negative, they start guessing and decide to look for hairy-cell.
<i>The final diagnosis:</i>	The Senator had had "childhood epilepsy. He took phenytoin. That drug, with the Epstein-Barr virus, is associated with common variable immunodeficiency disease. T-cells down, B-cells down, it keeps you from forming enough antibodies." "That's a type of immunoglobulin deficiency."

Background

Both episodes can be related to CA state standards for Physiology (9b,d,&e and 10b,c,d,&e)

Episodes were integrated into curricula towards the end of each individual unit in order to ensure students had prior understanding of concepts.

Prior to viewing “*Insensitive*”

Introduce students to the concept of CIPA by having them read article:

“Rare disease makes girl unable to feel pain. Genetic disorder deprives kindergartner of natural alarms”

Stephen Morton / AP

Nov. 1, 2004

<http://www.msnbc.msn.com/id/6379795/>

Prior to viewing “*Role Model*”

Introduce students to the concept of immunodeficiency by providing an understanding of the effects of the HIV virus on the immune system as well as the story of David Vetter and SCID

Practice!

If you have a yellow sticky on your chair you will be playing the role of the teacher.

Those individuals sitting around you will be playing the role of the students.

Stoppage Points

1. Show ER scene (2:16)

Ask stoppage point 1 questions

4. Induce Pain (1:15)

Ask stoppage point 4 questions

Results from Study

Nervous System

- learning occurred in all three test groups
- Exp 2 group scored statistically higher (approx 15%) than the control and exp1 groups on summative exam.

Immune System

- learning occurred in all three test groups.
- test scores for each group did improve but were statistically equal to one

Student Quotes

“[When I was taking the test] I was thinking I can do this and when I got to the CIPA question, I remembered that. The “House” episode did help. This gave me confidence to go back to the other questions [and answer them].”

Student Quotes

“I remember the nervous system one because that was kinda intense.”

“I remembered the movie for sure. I remember everything that happens.”

Student Quotes

“I think its good to do both because people need notes but the video, I don’t know its kinda fun and it was kinda educational at the same time. Because it was the same topic it kinda helped you get it more. It’s a good thing, it’s a good thing.....I think it’s good to stop em both because then that way if you do it that way its not, its not too fun like you’re watching a movie or we’re just watching a movie and then that way it balances it out.”

Thank you!

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