

The Body at War!

Learning Outcomes

- Define and give examples of the General Defence system and Specific Defence system of the human body.
- Define the term vaccination, immunisation, antibiotic.
- Create bacterial agar plates using aseptic technique.
- Present information to the class and defend opinions on the newspaper article given.
- It is hoped that this module will enable students to make informed decisions about contemporary biological issues by:
 - Constructing scientific knowledge in an organised manner.
 - Collaborating with their peers to arrive at informed decisions.
 - Developing their cognitive and reasoning competences.
 - Being open to express their attitudes to the ethical issues that present themselves in science.



Curriculum Content:

The content of the lessons come from the Leaving Certificate Biology Syllabus aimed at students of 15-18 years of age.

- Difference between the specific and general defence systems.
- The role of White blood cells to include monocytes and lymphocytes.
- Applications of antibiotics, vaccines and immunisation and their role in modern society, medicine and industries.
- Basic Microbiology – factors required for the growth of bacteria and aseptic techniques.

References:

Second Level Support Services - www.slss.ie
National Council for Curriculum and Assessment - <http://www.ncca.ie/>
State Examinations Commission - <http://www.examinations.ie/>
Irish Science Teachers Association - www.ista.ie
Biology Syllabus - http://www.curriculumonline.ie/uploads/attachments/PDF/1c_biology_sy.pdf
PROFILES - <http://www.profiles-project.eu/>
<http://www.hse.ie/enq/>
http://kidshealth.org/teen/diseases_conditions/
<http://www.irishhealth.com/article.html?id=15853>
<http://www.youtube.com/watch?v=udmwo5nvMQc>
<http://www.youtube.com/watch?v=u1xw0Qb5bqs>

Objectives

- to understand the role of vaccinations, antibiotics and immunisation techniques.
- to see how antibiotics are chosen for various infections using methods that mimic that of real scientists.
- to create a presentation and improve presentation skills.
- to discuss ethical issues

Activities

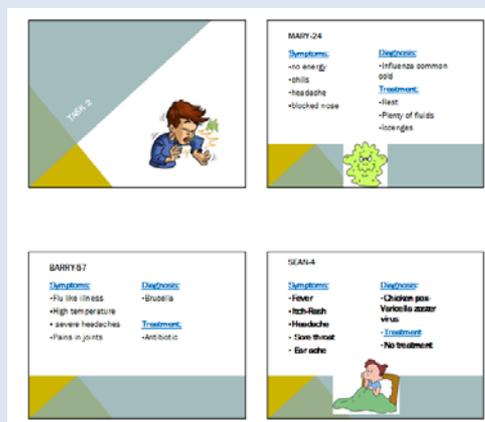
Task 1: Brainstorming – students discuss ways that the body protects itself against infection

Task2: Authentic inquiry-based activity – students read the diaries of people suffering from an infection. The students must match the symptoms of the people to the bacteria or virus that they have.

Task 3: Students grow bacteria on nutrient agar plates. Antibiotic discs are then added and the students can see the effect of antibiotics on the growth of bacteria.

Task 4: Students create a PowerPoint presentation on the information learned throughout the module and discuss their opinions on a newspaper article which discusses the possibility of drug companies making money from creating viruses.

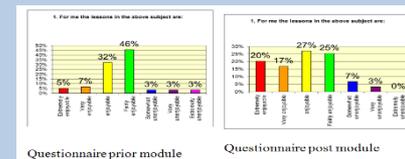
The following shows an example of a part of a presentation created by one group of students.



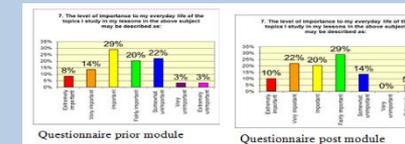
Illness	Symptoms	Diagnosis	Treatment
MARY-24	-no energy -chills -headache -blocked nose	-Influenza common -cold	-Rest -Plenty of fluids -Ice-creams
BARRY-17	-Flu like illness -High temperature -severe headaches -Pain in joints	-Diphtheria	-Antibiotic
SEAN-4	-Fever -Red-Rash -Headache -Sore throat -Ear ache	-Chicken pox -Varicella zoster -Virus	-Treatment -No treatment

Results:

- Over one quarter of the students found that the module taught here was more enjoyable than previous teaching modules.



- The students felt that the topics covered were relevant to their everyday lives and to society. This creates a purpose for learning for the students.



- On observation the students seemed to be hugely engaged in each task and participated well in all aspects of each task.
- Oral feedback from the students shows that they particularly enjoyed the discussions and voicing their opinions.

Evaluation:

- Each of the lessons were easy to prepare and easy to implement.
- Time constraints inhibited more discussion time.
- The students thoroughly enjoyed the activities but would like more time to ask questions during the process.

Conclusion:

- Participation levels were high in all tasks.
- Students enjoy inquiry-based activities more than traditional teaching methods.
- Students feel that Biology lessons are very relevant in their everyday lives.