 Assessment task: Outbreak

Module 7 – Infectious disease

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Outcomes

Skills

* BIO11/12-3 conducts investigations to collect valid and reliable secondary data and information
* BIO11/12-5 analyses and evaluates secondary data and information
* BIO 11/12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose

Content

* BIO12-14 analyses infectious disease in terms of cause, transmission, management and the organism’s response, including the human immune system

Resources

* Access to the Internet
* A4 Booklet for Research Journal [provided by student]
* Computer Room Lessons will be provided for this assessment

Referencing

Students are required to include at least five secondary sources.

You must reference your work appropriately, using the Harvard System. Students are encouraged to access the [Library guides website](http://libguides.mhs.vic.edu.au/c.php?g=174589&p=1149960) to have a clear understanding of what needs referencing and how to use the Harvard System.

[Neil’s Toolbox](http://www.neilstoolbox.com/bibliography-creator/index.htm) contains a citation generator. All you need to do is enter the information about your sources and it will generate a bibliography for you.

Assessment Task Details

Description of Task

You task is to play an interactive game about infectious diseases, journal your play, research the information and find scientific evidence to assess if the game is scientifically correct or not.

Find one interactive strategy game on infectious diseases.

* Plague Inc. [Android app](https://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwjopN-_5fvWAhVINJQKHb0TCDkQFgg1MAE&url=https%3A%2F%2Fplay.google.com%2Fstore%2Fapps%2Fdetails%3Fid%3Dcom.miniclip.plagueinc%26hl%3Den&usg=AOvVaw1ra_gyurEH31otGZWgXfqh) [iTunes app](https://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0ahUKEwjopN-_5fvWAhVINJQKHb0TCDkQFgg8MAI&url=https%3A%2F%2Fitunes.apple.com%2Fus%2Fapp%2Fplague-inc%2Fid525818839%3Fmt%3D8&usg=AOvVaw2XT4vAZMYjn69-ytbbtGi4)
* [Pandemic 2](http://pandemic2.org/) (Flash)
* [The great flu](http://www.thegreatflu.com/) (Flash)

Find valid and reliable websites to use as secondary sources which will support your gameplay and research.

* [Country statistics](http://www.who.int/countries/aus/en/)
* [A to Z of infections dieases](http://www.health.nsw.gov.au/Infectious/Pages/a-to-z-infectious-diseases.aspx)
* [Infectious disease](http://www.hhmi.org/biointeractive/infectious-disease)
* [Natural selection in an outbreak](http://www.hhmi.org/biointeractive/natural-selection-outbreak)

Part A - Create a research journal

You will play an interactive game about infectious diseases. It is recommended that you play a few times so that you are aware of the rules and the subsequent gameplay. You will record your gameplay. This can be done by taking screenshots or recording the gameplay using a compatible device.

All research/game play conducted to produce your report must be recorded in a research journal. Your journal is to record the process of collecting information using regular dated entries using an A4 exercise book. You might create a table of contents that looks like a schedule to keep making regular progress.

Please use the following guidelines:

* Number all pages of your journal in the top corner and include your full name on the front of the book or inside the cover.
* Provide copies of relevant information from a variety of credible sources. These copies must be pasted into your journal as single pages. Do not attach multiple pages or folded pages.
* Record all sources of information attained - this includes any notes, quotations, pictures, statistics, screenshots, including qualitative/quantitative data etc.
* Write detailed notes as you create your disease and as it evolves, then as it is transmitted around the globe (use screen shots for evidence of in-game play)
* Select the most appropriate material for the purposes of completing the task and clearly indicate this selection by underlining or highlighting it;
* Include a comment on the reasons why the research material has been included in your journal. This may be in the form as an annotation.
* Write an evaluation that shows how effectively information was located, selected and organised for the task and how this task could have been completed more effectively if it had to be done again.

Please note that marks awarded for the research journal are determined by the quality of the information collected rather than the quantity.

Part B - Report

Answer the following questions as a report using your research journal notes only. Your report should be formatted in size 12 Arial font with single spacing.

1. Question
   1. Identify a type of pathogen from the game you have chosen, i.e.: from virus, bacteria or parasite.
   2. Research a real infectious disease caused by this type of pathogen and include information of at least three symptoms expressed.
2. Question
3. Demonstrate your understanding of the transmission of the real disease by using the information on the symptoms
   1. Create a link to Louis Pasteur regarding the information from part A above.
4. Question
5. Analyse /investigate the validity and reliability of the information provided in-game in comparison to the real world infectious disease you chose.
   1. What are the similarities and differences between the in-game disease you have created and your chosen real-world disease?
6. Question
7. Make an explicit connection between the evolution of your disease and the application of Koch’s Postulates by a researcher to isolate the pathogen responsible.
   1. Construct an overview of how the immune system is reacting to your in-game created disease.
8. Question
9. Write a detailed evaluation of the effectiveness of the treatment, prevention and control of this disease both from within the game and in a real-world context, using data collected from secondary sources to support your evaluation.

Marking rubric

| Marks | Criteria |
| --- | --- |
| Outstanding  17-20 | The immune system reaction has been accurately portrayed in context to the created disease using in depth scientific writing.  Pathogen has been correctly identified in detail using correct scientific language. Transmission of the disease has been explained inaccurate scientific detail using three symptoms. Three symptoms have been included and explained accurately and in detail both in the research journal and the report. A detailed connection has been made between the disease and Koch’s postulates. The data and information in the report are scientifically appropriate and specifically link to the research journal.  Similarities and differences between gameplay and disease identified accurately in detail. Thoroughly assesses the reliability, accuracy and validity of the sources for both the in-game and real-world disease.  Research Journal is engaging and covers the content required for a scientifically accurate report. There is a logical progression of ideas in the research journal. Research journal clearly and effectively expresses ideas using precise scientifically appropriate descriptions and vocabulary and evidence. The research journal focuses only on the research questions.  Successful and consistent style choices have been made that serve the presentation purpose. Minimal errors in paragraphing, sentence structure, spelling, punctuation, capitalization and format.  All sources are acknowledged correctly, both in text and in the bibliography. At least 5 sources of valid and reliable data and information has been sourced. |
| High  13-16 | The immune system has been portrayed accurately in a limited detail to the created disease.  Pathogen has been correctly identified in detail using correct scientific language. Transmission of the disease has been explained inaccurate scientific detail using three symptoms. Three symptoms have been included and explained accurately and in detail both in the research journal and the report. A detailed connection has been made between the disease and Koch’s postulates.  Similarities and differences between gameplay and disease identified accurately in detail. Assesses the reliability, accuracy and validity of the sources for both the in-game and real-world disease.  Research Journal is engaging and covers the content required for a scientifically accurate report. There is a logical progression of ideas in the research journal. Research journal adequately expresses ideas using scientifically appropriate descriptions and vocabulary and evidence. The research journal focuses only on the research questions.  Consistent style choices have been made that serve the presentation purpose. Minimal errors in paragraphing, sentence structure, spelling, punctuation, capitalization and format.  All sources are acknowledged correctly, both in text and in the bibliography. 3 or 4 sources of valid and reliable data and information has been sourced |
| Sound  9-12 | The immune system has been mentioned mostly accurately in context to the created disease.  Pathogen has been correctly identified in detail using correct scientific language. Transmission of the disease has been explained in detail using three symptoms. Three symptoms have been included and explained accurately and in detail both in the research journal and the report. A connection has been made between the disease and Koch’s postulates. The data and information relate to the report requirements, but are not entirely scientifically appropriate.  Similarities and differences between gameplay and disease identified accurately in detail. Assesses two of reliability, accuracy and validity of the sources for both the in-game and real-world disease.  Research Journal is engaging and covers most of the content required for the report. There is a logical progression of ideas in the research journal. Research journal expresses ideas and scientifically appropriate descriptions, evidence and vocabulary but they are more general than specific. The research journal focuses only on the research questions.  Consistent style choices have been made that serve the presentation purpose. Minimal errors in paragraphing, sentence structure, spelling, punctuation, capitalization and format.  Some sources are acknowledged correctly. 2 sources of valid and reliable data and information has been sourced. |
| Basic  5-8 | The immune system has been mentioned in a general context.  Pathogen has been correctly identified using mostly correct scientific language. Transmission of the disease has been explained using two symptoms. A couple of symptoms have been included and explained in some detail both in the research journal and the report. A connection has been made between the disease and Koch’s postulates. There is some data and information provided in the report which vaguely relates to the research journal  Similarities and differences between gameplay and disease identified in some detail. Assesses one of reliability, accuracy and validity of the sources for both the in-game and real-world disease.  Research Journal briefly outlines the information required to complete the report. There is a logical progression of ideas in the research journal. Research journal inconsistently and sometimes inappropriately expresses ideas or scientific descriptions and vocabulary. The research journal focuses mainly on the report questions, some loosely connected material present. Establishes and generally maintains an appropriate style  Frequent errors in paragraphing, sentence structure, spelling, punctuation, capitalization and format.  Few sources are acknowledged correctly. 1 source of valid and reliable data and information has been sourced. |
| Limited  1-4 | The immune system has been briefly mentioned.  Pathogen has been correctly identified at a basic level. Transmission of the disease has been briefly explained using a symptom. A symptom has been included and briefly explained in both the research journal and the report. A connection has been attempted between the disease and Koch’s postulates. Details may be vague. There is very limited data and information provided in the report and it is not logically linked to the research journal nor scientifically appropriate.  Similarities and differences between gameplay and disease identified briefly. Mentions reliability or accuracy or validity for both the in-game and real-world disease sources.  Research Journal is vague and does not cover information required for the report. Progression of ideas in the research journal not logical. Scientific language and vocabulary are not precise or appropriate. The research journal is not consistently focused on the report questions. Lacks a consistent appropriate style.  Several errors in paragraphing, sentence structure, spelling, punctuation, capitalization and format which interfere with understanding.  No sources are acknowledged in text and bibliography is limited and not in the correct format. Data and information are not from valid and reliable sources. Very limited qualitative data has been provided. |
| No attempt  0 | No attempt made. |