

Subject area/course: Science/Biology

Grade level/band: 9-12

Task source: Virtual Learning Academy Charter School (VLACS) in collaboration with the Center for Collaborative Education; Author: Rebecca Clark

Body Systems

TEACHER'S GUIDE

A. Task overview:

In this task, students will:

- Part 1: Gather background research on the 11 body systems
- Part 2: Select a virus and research the effect it has on each of the previously researched human systems
- Part 3: Create a comprehensive Public Service Announcement (PSA) for the Center for Disease Control (CDC) educating the public about the virus

B. Aligned standards:

1. Common Core State Standards

[CCSS.ELA-Literacy.RST.11-12.1](#) Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

[CCSS.ELA-Literacy.RST.11-12.2](#) Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

[CCSS.ELA-Literacy.RST.11-12.9](#) Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

[CCSS.ELA-Literacy.W.11-12.6](#) Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

[CCSS.ELA-Literacy.W.11-12.8](#) Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

[CCSS.ELA-Literacy.W.11-12.9](#) Draw evidence from literary or informational texts to support analysis, reflection, and research.

[CCSS.ELA-Literacy.W.11-12.10](#) Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.



2. Critical abilities

Research: Conduct sustained research projects to answer a question (including a self-generated question) or solve a problem, narrow or broaden the inquiry when appropriate, and demonstrate understanding of the subject under investigation. Gather relevant information from multiple authoritative print and digital sources, use advanced searches effectively, and assess the strengths and limitations of each source in terms of the specific task, purpose, and audience.

Communication in Many Forms: Use oral and written communication skills to learn, evaluate, and express ideas for a range of tasks, purposes, and audiences. Develop and strengthen writing as needed by planning, revising, editing, and rewriting while considering the audience.

Analysis of Information: Integrate and synthesize multiple sources of information (e.g., texts, experiments, simulations) presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to address a question, make informed decisions, understand a process, phenomenon, or concept, and solve problems while evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

3. Other standards

New Hampshire Science Standards

S:LS4:11:3.2 Explain how the immune system functions to prevent and fight disease.

S:LS4:11:3.3 Explain how the immune system, endocrine system, or nervous system works and draw conclusions about how systems interact to maintain homeostasis in the human body. [LS4(9- 11)SAE+FAF-10]

S:LS4:11:2.6 Use evidence to make and support conclusions about the ways that humans or other organisms are affected by environmental factors or heredity (e.g., pathogens, diseases, medical advances, pollution, mutations).

S:LS4:11:2.2 Explain that vaccines were developed to reduce or eliminate diseases; and provide examples of how these medical advances have proven to be successful.

S:LS4:11:2.3 Describe and provide examples of how new medical techniques, efficient health care delivery systems, improved sanitation, and a more complete understanding of the nature of disease provides today's humans a better chance of staying healthier than their forebears.

S:LS4:11:1.1 Recognize that the immune system, endocrine system, and nervous system can affect the homeostasis of an organism.

S:LS4:11:1.2 Describe how the functions of all the human body systems are interrelated at a chemical level and how they maintain homeostasis.

New Hampshire Competencies

NH 2. Reading Informational Texts: Students will demonstrate the ability to comprehend, analyze, and critique a variety of increasingly complex print and non-print informational texts – including texts for science, social studies, and technical subjects.

NH 8. Speaking: Students will demonstrate the ability to speak purposefully and effectively - strategically making decisions about content, language use, and discourse style.

NH 9. Technology: Students will demonstrate the ability to use the tools of technology (including digital media and the Internet) to gather, interpret, and analyze information and create sharable products.

C. Time/schedule requirements:

Depending on class hours available, this work could be split over 3-4 weeks with other class work being completed as well.

D. Materials/resources:

Access to the Internet and the follow suggested websites. The websites below will be helpful as you move through this task.

- PSA and Podcast Links
 - PSA Template: http://soltreemrls3.s3-website-us-west-2.amazonaws.com/solution-tree.com/media/pdfs/Reproducibles_TTiG/publicserviceannouncementscriptingtemplate.pdf
 - PodCast: <http://www.apple.com/itunes/podcasts/specs.html>
- Body Systems Links
 - National Geographic: <http://science.nationalgeographic.com/science/health-and-human-body/human-body/>
 - Inner Body: <http://www.innerbody.com/>
- Virus Links
 - Center for disease control and prevention: www.cdc.org
 - World Health Organization: www.who.int
 - IntelliHealth: <http://www.intelihealth.com>

E. Prior knowledge:

Prior to this task, students must be familiar with the systems of the body and their processes, though they will have time to research these systems during the task.

F. Connection to curriculum:

This task was built to be an independent study task, with the collaboration of others along the way. Below are the instructions for how the task was originally laid out to be administered.

G. Teacher instructions:

The learning plan may vary by teacher; this is the sample used by the original task author.

Part	Approx. # Hours	Description
1	5 hours	Gather background research on one body system. Create a rough draft of tri-fold.
1	2 hours	Collaborate with other body system specialists to share tri-folds and discuss how the body systems work together to make an organism work as one. Create a comparison chart with 5 other body systems.
1	2 hours	Make final draft of tri-fold.
2	5 hours	Select a virus and research the effect it has on chosen body system and on the five other chosen body systems. Create a rough draft of a tri-fold.
2	2 hours	Collaborate with other experts to share your expertise on your virus and to discuss how your virus might affect other body systems.
2	2 hours	Make final draft of tri-fold.
3	3 hours	Create a rough draft of a comprehensive Public Service Announcement (PSA) for the CDC educating the public.
3	2 hours	Share PSA with other students.
3	2 hours	Create final written PSA.
3	3 hours	Create podcast to present final PSA.
3	2 hours	Share final podcasts with class.

Part 1: Background research

- Students should research one of the following body systems: Skeletal, Muscular, Cardiovascular, Digestive, Endocrine, Nervous, Respiratory, Lymphatic, Urinary, Reproductive and integumentary systems
 - Compile research notes in an outline format
 - Cite sources
- Check in with student
- Interim DBA Questions 1-4 (see below)
- Set up collaborative days where students will be sharing expertise on system with students with other body systems



Part 2: Select a virus and research the effect

- Students should choose a virus to research
- Students should conduct research examining the body's response to the virus and how 5 other body systems are targeted
 - Cite sources
- Interim DBA Questions 5-11 (see below)
- Set up collaborative days where students will share virus and tri-folds

Part 3: Create a comprehensive Public Service Announcement (PSA)

- Compile research into the PSA format
- Rough draft of PSA
- Review rough draft
- Final draft of PSA
- Share podcasts

A note on Discussion Based Assessments (DBA)

A DBA is an individual conversation between the student and teacher where the teacher asks questions about the content and the product the student created. The following sample DBA questions and prompts might be helpful in planning instruction.

1. What are the functions of the anatomical parts?
2. How does your system work at the molecular level?
3. How does your system directly connect to another system?
4. How does your body system indirectly connect to another body system?
5. How does a virus get in a cell?
6. How does a virus actually infect a cell?
7. How does a virus do harm to a cell?
8. How does a virus do harm to an organ?
9. How does a virus do harm to an organism?
10. How do you fight viruses?
11. Are there medicines for viruses?

H. Student support:

Possible accommodations for specific students should be discussed in advance with SPED and/or ELL teachers and could include:

- Extended time – the hours listed above are suggestions, but could be modified
- Focus on one body system and one virus for that body system
- Provide graphic organizers for body system, virus, and PSA
- Websites accessible in other languages
- Support with translation of website language
- Additional check-ins with the teacher

I. Scoring:

Student work can be scored using the SCALE Scientific Literacy Grades 9–10 Rubric and SCALE Effective Communication Oral Presentation Rubric.

