



Grades 10-12 | Science

Activity Plan: The Relationship Between Culture and Disease

**SOUTH ASIAN CANADIAN
LEGACY PROJECT**



**SOUTH ASIAN
STUDIES INSTITUTE**
University of the Fraser Valley

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Table of Contents

Overview	3
Big question	3
Activity description.....	3
Grades and curricular area(s)	3
Big Ideas	3
Curricular Competencies.....	3
Materials/Resources	4
Articles.....	4
Videos	4
Templates	4
Kick Off and Connect	4
Explore and Engage	5
Wrap Up and Assess	6
Wrap-up.....	6
Assessment.....	6
Extend and Transform	6
Student Activity Sheet: Disease in South Asian Populations	1
Reducing Diabetes in South Asian Populations	1
Curricular Competencies Rubric	3

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www.saffronthreads.ca

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Grades 10 to 12 | Science

Overview

Big question

How are disease, culture and genetics related?

Activity description

In this activity, students will have the opportunity to research statistics and explore the connections between genetics, culture and disease. In addition, students will use critical and creative thinking skills to propose some solutions to the health epidemics in South Asian populations in British Columbia.

Grades and curricular area(s)

- Grades 10-12
- Science

Big Ideas

- **Science 10:** DNA is the basis for diversity in living things.
- **Science for Citizens 11:** Scientific knowledge and processes inform our decisions and impact our daily lives. Scientific understanding allows humans to respond and adapt to changes locally and globally.
- **Anatomy and Physiology 12:** Homeostasis is maintained through physiological processes. Organ systems have complex interrelationships to maintain homeostasis.

Curricular Competencies

Science	
Science 10, Science for Citizens 11, and Anatomy and Physiology 12	Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal, local, or global interest
	Use knowledge of scientific concepts to draw conclusions that are consistent with evidence
	Analyze cause-and-effect relationships
	Demonstrate an awareness of assumptions, question information given, and identify bias in their own work and in primary and secondary sources
	Consider social, ethical, and environmental implications of the findings from their own and others' investigations
	Critically analyze the validity of information in primary and secondary sources and evaluate the approaches used to solve problems

Activity Plan: The Relationship Between Culture and Disease

Grades 10 to 12 | Science

Materials/Resources

Articles

- [Backgrounder: South Asian Canadians](#), Saffron Threads.
- [Diabetes Care](#), BCGuidelines.ca, Government of British Columbia, October 2021.
- [Diabetes in Canada: 2022 Backgrounder](#), Diabetes Canada.
- [Revisiting My Big Fat Diet: How a Métis Doctor Lost Weight with a Traditional Indigenous Diet](#), Samantha Lui, *CBC Radio*, March 4, 2018.
- [South Asian Health Report](#), Fraser Health Authority, 2015.

Videos

- Diabetes UK, [What Is Diabetes?](#)

Templates

- Student Activity Sheet: Disease in South Asian Populations
- Handout: Reducing Diabetes in South Asian Populations
- Curricular Competencies Rubric

Kick Off and Connect

Step 1

Ask students: What is epidemiology?

Provide an opportunity for students to share their knowledge and/or guesses, then provide the following definition: Epidemiology is a branch of medicine that deals with the incidence, distribution, and possible control of diseases and other factors relating to health.

Step 2

Have students generate questions about epidemiology. They may be broad questions about the science itself or more specific questions about its role in managing different diseases.

Students should generate at least three questions, but may generate more. You can share a few sample questions, which they may choose to include in addition to their three—for example:

- How do epidemiologists conduct their research?
- Why is epidemiology important?

Question stems to help students include:

- What I wonder is...
- How can epidemiology...
- What influence does/has epidemiology have/had....

Activity Plan: The Relationship Between Culture and Disease

Grades 10 to 12 | Science

- How do epidemiologists...

Step 3

Create groups of three (or allow students to choose groups), and then have each group choose three questions they will research.

Step 4

Have students complete their research using books, the internet or other provided resources. You may choose to pre-print resource articles and check out library books.

Step 5

Have each group share their answer to one question. Once a question is answered, another group cannot use the same question.

Explore and Engage

Step 1

Explain to students that while epidemiology is used in different populations around the world, they'll be learning about South Asian populations for this activity.

Have students read the South Asian Canadians backgrounder.

Step 2

Have students form into groups (the same groups as before, or new groups) and begin to research/learn about epidemiological data for South Asians in B.C. and Canada.

Using the **Student Activity Sheet**, have students research the following questions:

- Are there epidemiological studies on South Asian populations in B.C. or Canada? If yes, what do they tell us?
- What diseases are common? Which of these are epidemiologically linked?

Students should be mindful of their sources, relying only on those that are scientifically sound. All sources should be cited, with citations in APA format.

Step 3

As a class, review answers from the previous step as a class. Guide the discussion with questions such as:

- What did they find out about epidemiological studies?
- Did any groups find conflicting information?
- What are they left wondering?

Step 4

If it hasn't come up in previous discussions, explain that diabetes is a prevalent disease in South Asian populations.

Ask students what they know about diabetes. Some students may have diabetes or know someone who does.

Activity Plan: The Relationship Between Culture and Disease

Grades 10 to 12 | Science

Watch the video [What Is Diabetes?](#) (2:22).

Step 5

For their final project, students will research diabetes in South Asian populations and then propose a plan to help reduce the occurrence of the disease.

The Reducing Diabetes in South Asian Populations handout will guide students. Their final “deliverable” can be a video, paper, poster, and so on.

Wrap Up and Assess

Wrap-up

Have students present their final projects to the class.

Assessment

Assess the research skills and collaborative skills used throughout the activity. The student sheets can be assessed for a formal assessment. (See Curricular Competencies rubric.)

During final project presentations, have each group provide feedback to at least one other group. Feedback should include what they thought was well done, what they found interesting, and what could be improved.

In the early research stages of the final project, co-create a rubric with the class to assess their final project.

Extend and Transform

Explore common diseases in other cultural groups or geographic areas:

- What diseases are common?
- What are the lifestyle features that may be a leading cause for the disease?
- What changes can you suggest to help mitigate the occurrence of the disease in this population?
- What is the best method for the implementation of your plan with this cultural group?

Name: _____

Student Activity Sheet: Disease in South Asian Populations

1. What do epidemiological studies of South Asian people in Canada tell us? What diseases are common?
2. Are there epidemiological studies of South Asian people in British Columbia? What information can you obtain from these studies?
3. Is the epidemiology for South Asians the same in India? Why or why not? What are your theories?
4. What sources did you use to find the information on epidemiology of South Asian people in Canada and British Columbia? Are they scientifically sound sources? How do you know? Write a citation in APA format for each of the sources you used.

Reducing Diabetes in South Asian Populations

The goal of this project is to:

- Identify key elements of diabetes and how it develops
- Identify reasons why it is prevalent in South Asian populations
- Propose a plan to reduce diabetes in South Asian populations

With your group, complete the background research and begin formulating your plan. You can deliver your final project in any way you choose, including a video, a written paper, a poster, and so on.

Step 1: Background research

Diabetes	Notes
Physiology of diabetes	
Causes of diabetes	
Symptoms of diabetes	

1. Why are South Asians susceptible to diabetes? Is this true for all South Asians? Consider different South Asian countries, such as Afghanistan, Bangladesh, Pakistan in addition to looking at British Columbia and Canada.

2. What can people do to decrease their likelihood of developing diabetes?

Step 2: Plan of action

Your final project should address:

- What change(s) you are recommending
- How these changes can be implemented
- How these changes can be most effective
- How this information can be delivered to a large group of people
- Socio-cultural factors that impact your plan

Additionally, you should have a minimum of three scientific sources that support your plan.

Curricular Competencies Rubric

Curricular Competency	Evidence for Curricular Competency
Questioning and predicting	Student demonstrates a sustained intellectual curiosity about a scientific topic or problem of personal, local, or global interest
Processing and analyzing data and information	<p>Student seeks and analyzes patterns, trends, and connections in data, including describing relationships between variables, performing calculations, and identifying inconsistencies</p> <p>Student constructs, analyzes, and interprets graphs, models, and/or diagrams</p> <p>Student uses knowledge of scientific concepts to draw conclusions that are consistent with evidence</p> <p>Student analyzes cause-and-effect relationships</p>
Evaluating	<p>Student considers social, ethical, and environmental implications of the findings from their own and others' investigations</p> <p>Student critically analyzes the validity of information in primary and secondary sources and evaluates the approaches used to solve problems</p> <p>Student is able to assess risks in the context of personal safety and social responsibility</p>
Applying and innovating	<p>Student contributes to care for self, others, community, and world through individual or collaborative approaches</p> <p>Student co-operatively designs projects with local and/or global connections and applications</p> <p>Student contributes to finding solutions to problems at a local and/or global level through inquiry</p> <p>Student implements multiple strategies to solve problems in real-life, applied, and conceptual situations</p>