

Doctors to Diet: Health Awareness in Education

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Content Objectives

As a K-8 ESOL teacher in the Philadelphia School District, I serve nearly 65 children and families who speak 15 different languages. The most common languages spoken at our school are Bengali, Arabic, Chinese, Spanish & Kazakh. Our school has a growing population of South & Southeast Asian students, as well as families from the Middle East & North Africa. In the larger school community, about 2 out of every 5 students speaks another language at home, with over 40 different languages represented.

I am constantly thinking of ways to support my students and their families with their language development in and out of the classroom. While the school has a reputation for serving affluent families associated with the University of Pennsylvania, about 40% of our students are economically disadvantaged, especially our immigrant families and students of color. Compared to their native speaker classmates, our English Language Learners are often vulnerable to economic disparities, discrimination by peers and the community, and even religious intolerance.

As the daughter of an immigrant to the country, I have witnessed my father undergo cancer treatments over the past decade, and more so, experienced firsthand the pitfalls and challenges faced when navigating the American Healthcare System. During one of our first classes, it was shared that “getting cancer can be one of the worst things that can happen to you in the United States,” as there is a 5-10% less survival rate for poor and uninsured. The more I considered this reality, I realized that this would disproportionately affect the immigrant communities that I serve. As I witness my students and their families also undergoing some of the same healthcare challenges, it brings up many questions about how educators could support students in making healthier choices, while also building language and background knowledge about healthcare & careers in healthcare.

So, I pose the problem statement: How schools can extend their reach to truly support immigrant communities with health education, especially beginning with our youngest learners? Additional questions that I hope my unit aims to explore include: What language is necessary for students to understand cancer-related technology, diagnosis, and treatments? In what ways can we help ELLs advocate for themselves and their families within the healthcare system? What science background knowledge and vocabulary will support ELs interested in pursuing a career in medical-related fields? How can schools encourage students to make healthier choices in school and at home?

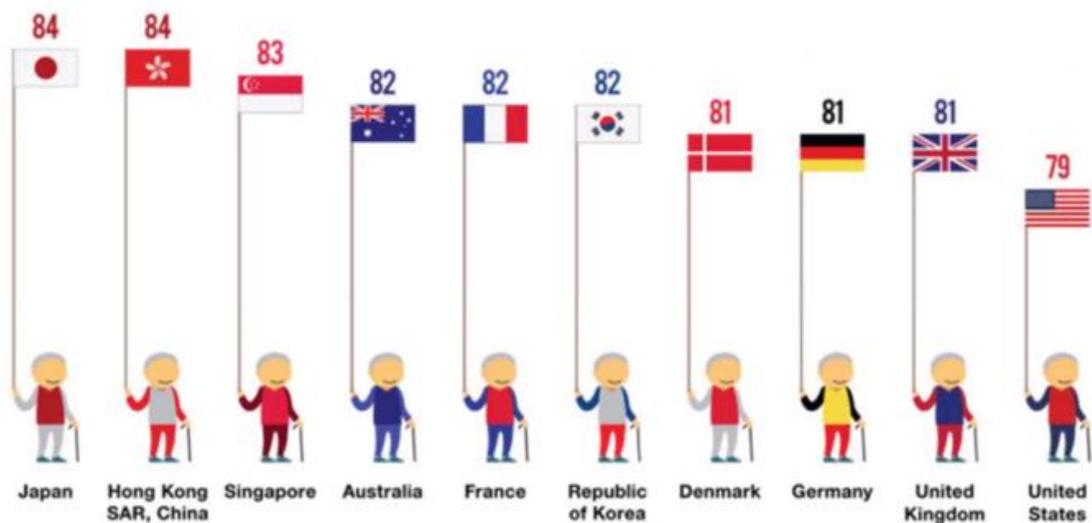
This spring, I was enrolled in the Teachers Institute of Philadelphia in a course entitled, “Cancer Biology & Technology” with Dr. Sandra Ryeom, Assistant Professor in the Department of Cancer Biology at the Perelman School of Medicine at the University of Pennsylvania and Dr. David Mankoff, the Gerd Muehllehner Professor of Radiology and vice chair of research at the University of Pennsylvania Perelman School of Medicine, along with numerous guest speakers. The course was designed to walk teachers through the journey from the basic science behind cancer to treatments all the way to steps for prevention. From the advent of our class, I became very aware of all of the things that I did not know about the healthcare system. Not only is there a complex language that surrounds the field, but there are also careers and fields within the system that are not talked about in mainstream media. I began to wonder how I could develop a unit that would give students the vocabulary to engage with conversations about the healthcare system and have a basic understanding when faced with health crisis within their own families.

Our journey from day one of class to our final meeting was jam-packed with background knowledge concerning the causes of cancer, how cancer spreads, symptoms, treatments, prevention, nutrition, and disparities faced around the world. Cancer is vast in its impact. According to Dr. Robert Weinberg (1996), “In truth, the term ‘cancer’ refers to more than 100 forms of the disease. Almost every tissue in the body can spawn malignancies; some even yield several types” (62). Some of these types of cancers we are predisposed to due to our family history, while others could be caused by environmental factors. While our cells try to avoid cancer, Weinberg (1996) explains that over time “our genes are attacked by carcinogens imported into our bodies from the environment and also by chemicals produced in our own cells” (69). As such, many factors will come into play when considering who is more likely susceptible to cancer, including age, weight, height, diet, health, exposure to environmental carcinogens, family history of cancer, location, and sheer bad luck. Being aware of your risks can allow people to make informed decisions about making healthier lifestyle choices.

The median age of a cancer diagnosis is around 66 years old, as there is an accumulation of mutations over time along with a deterioration of the immune system. While cancer greatly impacts people later in life, we learned that certain cancers can impact young adults and children at increased rates. For example, guest speaker Michael Feldman, Professor of Pathology and Laboratory Medicine at the Hospital of the University of Pennsylvania Perelman School of Medicine (2021) shared that there has been “an increase of typical cancers, such as colon cancer, (that) are showing up in younger adults (ages 20-50), some who have inherited risks while others who have been exposed to environmental issues.” The resurgence of smoking and vaping among youth may also be to blame with the increase risk and range of cancer exposures. Being aware of such risks can help children and young adults take preventative measures and campaigns can be developed for intervention by the community.

While preventative care help boost immunity and minimize exposure, cancers can inevitably occur. This is when the quality of diagnostic services and treatments can determine whether someone lives or dies. Guest speaker Dr. Larry Shulman, Head of the Center for Global Cancer Medicine spoke about his work setting up a Cancer Center in Rwanda. Before the center’s existence, Rwanda had 0% cancer care and Shulman was met with immense push-back while trying to start the center. Despite this, the center was able to bring not only health care professionals, but training and intervention programs that offer early detection for cancer. His experiences bring to light the many disparities that exist around the world, as well as many impoverished areas in the U.S. that do not have access to quality care and life-saving medicine. In fact, the graphic below shared by Dr. Shulman in his lecture questions whether or not there is a connection between life expectancy and quality health care. While many of the countries below have life expectancies over 79, there are many countries on the World Bank Life Expectancy Chart that have ages less than 60, many of which are in Africa.

Life Expectancy at Birth Around the World



Is there a correlation with the quality/availability of health care?

Source: World Bank Life Expectancy at Birth 2014

As we consider health disparities around the world, we must also pause to consider the disadvantaged populations at risk in the United States. This was the topic covered by our guest speaker Dr. Yehoda Martei, Vice Chief, Diversity, Inclusion and Health Equity, Division of Hematology/Oncology at the Hospital of the University of

Pennsylvania. Dr. Martei (2021) shared that “disparities exist intertwined throughout each level of care, esp. Cancer Treatment.” She explained that much of these disparities disproportionately impacts Blacks, who have high mortality rates due to cancer and, in particular, black women suffer disproportionately from breast cancer. Dr. Martei described that many cancer patients are less likely to receive surgery, radiotherapy, or chemotherapy due to a combination of factors, such as lack of health literacy, distrust of the system, economic stability, transportation, citizenship status, health insurance, etc. It is shocking to consider that where you live, your race, or your gender could make you more at risk to die from cancer. This session made it clear that as educators, we have a responsibility to advocate for our students and their families. One of the simplest ways to empower our students is with health education at a younger age, bring awareness of health vocabulary, illness prevention, awareness of the healthcare system, and overall encouragement of healthy habits.

It was through lectures, discussions, experiments, and assigned readings that helped us to narrow down our curricular units to support our teaching situations. The following unit developed from this seminar is entitled “Doctors to Diet: Health Awareness in Education.” Within this 2nd-5th grade unit that will target my Level 1 & 2 students, the guiding focus will be to build English Language Learners Vocabulary and Speaking Stems surrounding health and the healthcare field. We will begin exploring information about culture, health, and lifestyles of children around the world. We will then use data to research about healthcare statistics to talk about sicknesses children and young adults catch, as well as the healthy choices that can help reduce the risk for illness. We will then transition to learn about healthcare, including the different types of careers, tools, and people that help us when we are sick. It is during this part of the unit that students will act like a scientist and conduct small experiments using the scientific method. Lastly, the unit will talk about advocacy surrounding healthcare and compare our healthcare system to norms in other countries, especially those countries representative by our diverse community. Students will consider how they can advocate for themselves and teach others about physical and emotional health, especially surrounding cancer and other illnesses.

At the end of this unit, students will be able to use a variety of health-related vocabulary, discuss healthy choices they can make in their lives, understand the basics of cancer and how illnesses spread, and become an advocate and helper to those suffering with cancer or other serious illnesses. I expect that students will want to become involved in a service-learning project to donate money, time, or other goods to support local organizations, hospitals and patients.

This unit aligns with English Language Development Standards for listening, speaking, reading, and writing, while also integrating social studies, science, and math objectives. The objectives of the unit will include the following:

- Explore how children live their lives around the world, with special focus on healthcare, food, and lifestyle,
- Explain how cancer and other illnesses develop and who gets sick,
- Identify healthy habits that students can integrate into their everyday lives,
- Understand the scientific method as a procedure to follow in order to test a hypothesis,
- Express empathy when others are sick and find ways to support others,
- Recognize the power of language in studying key vocabulary terms related to cancer education and healthcare,
- Establish a plan to take action against healthcare disparities in our community and world.

Teaching Strategies

There is a heavy emphasis in K-8 ESOL to develop students' English Language Skills as a means for learning academic content. However, in the 2020 Edition of the new WIDA Standards (2020), when teachers must focus on integration of content and language with attention of multimodality they can also promote:

“Understanding the connections between content and language, Making Meaning within and across content areas (disciplines), Interaction of students with each other in challenging content activities, Coordination of design and delivery of curriculum, instruction, and assessment” (p.19).

As a Teacher of English for Speakers of Other Languages (TESOL), it is my responsibility to support classroom teachers with content, as well as instruct English Learners based on the WIDA Standards in Reading, Writing, Listening, and Speaking goals. The following four units are designed to support English Language Learners in grades 2-8, although student resources and content would be best geared for Level 1-3 students in grades 2-5. In many instances ESL teachers use both push-in and pull-out models for instruction during the school day; however, this curriculum would work best in a pull-out or co-teaching model that would allow for more autonomy. Collaboration with the classroom math and science teachers would also be essential to address the specific academic goals for each grade level.

Unit 1 - Explore Like a Scientist: Children Around the World

The first unit focuses on building background about how children live around the world. Specifically, students will take a cultural tour to compare and contrast the lifestyles of children with particular focus on their access to clean water and healthcare, housing, diet, and everyday life. During this unit, English Language Learners should learn key vocabulary about human survival and development that will be foundational to the following units. A potential assessment (formal or formative) could be a student-made digital scrapbook that features information about children in another country. Students

could use platforms like Padlet, Google Slides, or another tool that allows students to easily link digital texts. This unit will also lend itself to discussions about human rights, equity, and healthy choices. During this unit, students may begin to generate ideas for a service-learning project that will develop during each unit of the curriculum. The key teaching strategies for this unit include:

- *Utilizing Visuals* – English Language Learners benefit from visual scaffolds to help them understand complex concepts. For this particular unit, there are a number of mentor text with rich graphics and photographs that can help learners understand how students live in other countries. Educators could also utilize videos and highly visual websites for research.
- *Storytelling* – Analogies and personal connections go a long way to get students to engage in content. Instead of simply learning factual information, I would suggest that teachers find stories of actual children around the world, or even stories from English Language Learners themselves, to tell the stories of how children live in different places.
- *Scaffolding* – English Language Development (ELD) teachers should use a variety of sentence frames, vocabulary, and modeling to support students in accessing the material. Lessons could use the QSSSA (Question – Signal – Share – Stems – Assess) structure to encourage a release of accountability for students, especially when planning for meaningful conversations.
- *Questioning* – While questions are often developed by teachers for students, one highly effective teaching strategy would be to have students develop an essential question(s) for investigation. Some suggestions could include: *How do children live their lives around the world? Where do they live? What do they eat and why? How do they access clean water? What do they do when they are sick? What are common illnesses that children encounter and why?*

Unit 2 - Research Like a Scientist: Stories of Health Data

The second unit is centered around data analysis. Students will work in small groups to read health data about children around the world. Working together, they will analyze the data, create bar graphs, pie charts, and make comparisons. Depending on the students' comfort level, they can also do data presentations to the class. During this unit, students may begin to narrow down and choose an idea for a service-learning project based on their generalizations based on the data.

- *Build Background Knowledge & Vocabulary* – One key strategy that many teachers overlook when working with English Language Learners is to deepen their background knowledge of the content and vocabulary through explicit or

implicit instruction. In this unit, students will target math and science content vocabulary.

- *Think, pair, share* – Students will have the opportunity to share their thoughts and ideas with partners. Then, partners will group with another partnership to share their ideas and collaborate on their research.
- *Jigsaw* – Students will work collaboratively to analyze different parts of the same text and analyze them for different purposes.

Unit 3 - Act Like a Scientist: Studying Fruit Flies & Healthy Food Choices

The third unit will pose an experiment for students to engage in to evaluate healthy foods by use of fruit flies. Fruit flies are inexpensive to purchase online, and the experiment relies on basic science lab equipment and small food samples. There are a number of Philadelphia-based science programs, such as *eClose*, or donor programs that would allow students to get access to more equipment for further study. Depending on the amount of time you have, students could develop science fair boards and rehearse presenting their findings to classmates or staff members.

- *Journaling* – Students will have the opportunity to reflect on lessons, and respond to pre-determined prompts. You may opt to have one journal designated for this work, or they may write in subject-area journals to prepare for thinking about their own experiment.
- *Experimentation* – Students will learn through developing a hands-on experiment with fruit flies. They will work through the scientific method and test healthy foods. Each group can develop their own hypothesis.
- *Graphic Organizers* – Teacher-made worksheets using visual representations will help students organize their thinking, plan for their experiment, and assess their understanding.
- *Build Background Knowledge & Vocabulary* – One key strategy that many teachers overlook when working with English Language Learners is to deepen their background knowledge of the content and vocabulary through explicit or implicit instruction. In this unit, students will target science content vocabulary and also explore careers in healthcare.

Unit 4 - Talk Like a Scientist: Advocacy for English Language Learners

The fourth unit will be a service-learning project that is led and developed by the students. The topic of the unit should be inspired by what students learned about in the previous units. The object of the unit should be to advocate for others, especially in regards to healthcare disparities. The final project(s) will be selected by the student. Possible projects could be (but not limited to) pamphlets or fliers, skits to be presented to classrooms, a website or slideshow, an infographic, or a fundraiser for a health

organization. There are also a number of local agencies, such as *Need in Deed*, that specialize in Service Learning and support classrooms in connecting with outside organizations for their projects.

- *Use of native language* – By allowing students to access a variety of diverse texts, including those in other languages, allows students to lower their affective filter, while also engaging the content. Students will also have the chance to write and create material for community members who speak the same language.
- *Small Group Instruction* – Besides working with students 1:1, small group instruction is a key strategy to target specific skills that students need work with. For this unit, students can develop their service-learning project while also targeting key ELD skills in reading and writing.
- *Shared & Independent Work* – Students will have the opportunity to complete tasks working with partners, small groups, and independently. This helps students have more accountability, but also offer support to peers.

Classroom Activities & Lesson Plans

Unit 1 - Explore Like a Scientist: Children Around the World

<p><i>Timeline for Completion</i> This unit should take between five to seven days.</p>
<p><i>Objectives & Standards</i> WIDA: English Language Development Standard 1: English language learners communicate for Social and Instructional purposes within the school setting Social and Instructional language.</p> <p>Social Justice Standards: 1. Students will develop language and historical and cultural knowledge that affirm and accurately describe their membership in multiple identity groups, and 8. Students will respectfully express curiosity about the history and lived experiences of others and will exchange ideas and beliefs in an open-minded way.</p> <p>CCSS.ELA-Literacy.CCRA.R.6 Assess how point of view or purpose shapes the content and style of a text.</p> <p>CCSS.ELA-Literacy.CCRA.R.7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.</p>
<p><i>Materials</i></p> <ul style="list-style-type: none"> • Possible Mentor Texts: <i>A life like mine: How children live around the world</i> (2002) <i>Around the World with the Ingredies: A Taste Adventure</i> (2016) Assorted online videos & articles

- Post-it notes
- Sentence Frames & Vocabulary Cards
- Anchor Chart Paper or Digital “K-W-L chart” (Jamboard, etc.)
- Analog or digital writing materials (Padlet, Google Slides)

Step-by-Step Completion Guide

Pre-Teach

Before beginning the text, it will be helpful to create an anchor chart and review “The Power of Accountable Talk,” that promotes students to engage and listen to one another. Use some of the sentence starters and questions below to help scaffold students into better conversations about the text.

For example:

- Can you tell me more?
- This reminds me of _____, because _____.
- Why do you think that?
- Can you give me an example from the picture?
- In addition to what you said about _____, I noticed....
- I agree with _____, because....
- I disagree with _____, because...

K-W-L

It is important to assess what students already know about the topic of how children live around the world. This can not only give insight but also correct any misunderstandings. One traditional way for doing this would be to work with students to create a K-W-L chart. Students write down on post-it notes (or a teacher records) what they KNOW, what they WANT to know, and eventually, what they have LEARNED about the topic. In the digital age, this type of instructional strategy could be developed on a SMART Board or laptop using platforms such as Jamboard, Google Suite, etc. Through this lesson, students will begin to explore subtopics that interest them such as food, traditions, school, health, and more. They can build essential questions to investigate before beginning their research.

Reading to Learn & Building Vocabulary

Before students begin reading, a few structures should be set up with the class.

- 1) Students should have a vocabulary tracker set up to keep track of new vocabulary words that are relevant to the topic. This could be as simple as an A-to-Z vocabulary chart, or a word map that requires definitions and illustrations. *(See Appendix for templates and suggested word lists)*

2) The classroom should establish norms for independent reading time, as well as small group instruction. Through these components of a balance literacy model, students will have the opportunity to engage in leveled texts to explore the content. There are a number of excellent mentor texts, including Discovery Kids Readers that feature real stories of children around the world. With my small groups, I have used the text *A life like mine: How children live around the world* (2002) to discuss survival and development needs such housing, water, food, health, school, play, and more. Another excellent text that gives insight into the diet of children around the world is *Around the World with the Ingredies: A Taste Adventure*. Overall, the text sets should reflect the reading levels of the students, as well as address any interests shared during the brainstorming K-W-L lesson. Leveled articles are also available for free on sites such as NewsELA, Listenwise, and Readworks. If using analog texts, students are encouraged to track important facts with post-it notes or on a note collector (*See Appendix*). If using digital texts, students could keep a digital notebook or a collaborative document to take notes. *YouTube* and *National Geographic* are also wonderful resources for finding videos of students sharing what their life is like in other countries. Students may also have insight into Influencers or Youtubers from other countries that describe their everyday life.

Sharing What We Have Learned

While reading and writing are important skills, many English Language Learners benefit from Speaking and Listening to further their English Language Development. After collecting important information from their readings, students will work independently or in small partnerships to create a digital scrapbook to share with their classmates their findings. Students can link texts to a Padlet, Google Slide Presentation, etc. and present their findings. The most crucial part of the lesson, however, will be the discussion that follows. What connections can students make? What are the clear concerns that children around the world have regarding health and healthcare? These conversations will guide the future units and the trajectory of the service-learning project. Teachers can create an anchor chart or “parking lot” to track students’ interests and refer back to it during later lessons.

Supports & Modifications

For students with ELP Levels 1-3, offer a graphic organizer or template with transitional phrases to help guide their project and understanding. Beginner English Language Learners work best with sentence frames and simple sentences to guide their speaking and writing. It supports them to then focus on building vocabulary about the content.

To help support students in their native language, you can utilize Google Translate. Here is an example of developing a Google Spreadsheet coded to translate vocabulary words for English Language Learners: [Google Translate Sample](#)

Evaluation Tools

This unit is intended to build background knowledge, and therefore, students can work to create their own rubric for evaluation. Students should create a virtual or print scrapbook board to share important details about children's everyday lives in other countries.

Unit 2 - Research Like a Scientist: Stories of Health Data

Timeline for Completion

This unit should take between five to seven days.

Objectives & Standards

WIDA: *Standard 3* – Language for Mathematics

English language learners communicate information, ideas and concepts necessary for academic success in the content area of mathematics.

Social Justice Standards: 10. Students will examine diversity in social, cultural, political and historical contexts rather than in ways that are superficial or oversimplified. 14. Students will recognize that power and privilege influence relationships on interpersonal, intergroup and institutional levels and consider how they have been affected by those dynamics.

CCSS.MATH.CONTENT.2.MD.D.10 - Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve put-together, take-apart, and compare problems using information presented in a bar graph.

CCSS.MATH.CONTENT.3.MD.B.3 -Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.

CCSS.MATH.CONTENT.4.MD.B.4 - Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots.

Materials

- World Health Data

- Student Graphic Organizers
- Sentence Frames & Vocabulary Cards
- Anchor Chart Paper
- Assorted Paper & Writing Tools
- Access to Technology (Computers, SMART Board)

Step-by-Step Completion Guide

Pre-Teach

Just like in unit 1, it is important to pre-teach accountable talk and vocabulary that promotes students to engagement. Use some of the sentence starters and questions below to help scaffold students into better conversations about the text.

For example:

- I notice that...
- There are more _____ than _____...
- The most is _____...
- The least is _____...
- _____ and _____ are similar because _____...
- _____ and _____ are different because _____...
- The data shows...

Data Jigsaw

Mathematicians collect, read, and interpret data using a variety of different graphs, tables, and charts. The Data Jigsaw would have students analyzing data regarding children’s health from the US and abroad. Students would be assigned different types of visuals, make their observations, and would share aloud their findings. Through this group or partner work, they would learn about different types of data visualizations while also learning about illness, health, and healthcare disparities that exist around the world. This could occur over 2-3 days, with students having the chance to rotate through different types of graphs. There are many up-to-date graphs available through <https://seer.cancer.gov/statfacts/> that can be used. As in the last unit, the class discussion and reflection are the key components of this lesson. Track student thinking on anchor charts or through a digital platform.

Data Presentation

While reading and interpreting data is crucial, so is creating and presenting about data. For the culminating activity, students be assigned to represent statistical information in visual form. Data is available online through official sites, such as the National Cancer Institute, but also through private organizations, such as Alex’s Lemonade Stand. Students will develop their graphs based on the research and then will create a “gallery wall” whereby their classmates would rotate around the room, read and review one

another's work, and leave comments on post-it notes about their observations. This could be a formative assessment or use a rubric to evaluate the graphs. (See Appendix)

Supports & Modifications

Similar to unit 1, students with ELP Levels 1-3, would benefit from a graphic organizer or template with transitional phrases to help guide their project and understanding. Beginner English Language Learners work best with sentence frames and simple sentences to guide their speaking and writing. It allows them to focus on building vocabulary.

To help support students in their native language, you can utilize Google Translate. Here is an example of developing a Google Spreadsheet coded to translate vocabulary words for English Language Learners: [Google Translate Sample](#)

Evaluation Tools

This unit is intended to build background knowledge, and therefore, students can work to create their own rubric for evaluation. The key evaluation categories would include: Completion of Graphs (including correct labels, scaling, and categories) and Thorough Analysis (including observations about most, least, comparisons). The final data visualization project could be hand-made or digitally designed by students. Some students may require a pre-made template. (See Appendix)

Unit 3 - Act Like a Scientist: Studying Fruit Flies & Healthy Food Choices

Timeline for Completion

This unit should take around two weeks.

Objectives & Standards

WIDA Standard 4 – Language for Science

English language learners communicate information, ideas and concepts necessary for academic success in the content area of science.

Social Justice Standards: 10. Students will examine diversity in social, cultural, political and historical contexts rather than in ways that are superficial or oversimplified. 14. Students will recognize that power and privilege influence relationships on interpersonal, intergroup and institutional levels and consider how they have been affected by those dynamics.

3-LS4-3 Biological Evolution: Unity and Diversity - Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4 Biological Evolution: Unity and Diversity - Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

PA State Standard - 11.3.3.C Explain the importance of eating a varied diet in maintaining health.

Materials

- Large Test Tubes with Stoppers
- Fruit Flies
- Food samples
- Magnifying glasses and/or Microscope
- Science Journals
- Printed (and preferably laminated) directions
- Science Fair Boards
- Assorted art materials

Step-by-Step Completion Guide

Pre-Teach

Before beginning the unit, it is important to pre-teach or review the Scientific Method and key vocabulary: Observe, Question, Research, Hypothesize, Experiment, Test Hypothesis, Draw Conclusions Report. There are a number of songs and video resources, as well as videos that can be used to develop this vocabulary. Students will also reflect on the previous units and develop a hypothesis about healthy food choices that they could study using fruit flies. They will also review fruit fly metamorphosis, as well as vocabulary surrounding scientific tools.

Experiment

Students will work in small groups to set up, monitor, journal, and evaluate their hypothesis using fruit flies. Encourage students to lean on the work they have already done in the previous two units and consider food available in different parts of the world, healthy vs junk food, etc. Students will also set up parameters for who, when, and how their experiment will be monitored. Educators can support this process by creating a science journal with sentence frames set up. (*See Appendix*) Students will continue this process over the course of two weeks to gather enough evidence to create

a science fair board and present to their classmates and the community. At the completion of the science fair, students should discuss what implications their findings could have on the larger conversation about healthy choices, health disparities, and healthcare.

Small Group Instruction

While small group instruction is an integral component of many ELA and math classrooms, teachers could use this time to monitor student understanding of complex concepts, read articles about different careers in the medical field, and also build vocabulary. Some suggested careers in Pathology to highlight include: Lab Assistant, Medical Technologist, Medical Lab Scientist, Histotechnologist, Cytotechnologist, Molecular Technologist, and Pathology Assistant.

Supports & Modifications

Similar to units 1& 2, students with ELP Levels 1-3, would benefit from a graphic organizer or template with transitional phrases to help guide their project boards and understanding. Beginner English Language Learners work best with sentence frames and simple sentences to guide their speaking and writing. It allows them to focus on building vocabulary. I would also pair students in small groups with varying levels of language ability or with native peers.

To help support students in their native language, you can utilize Google Translate. Here is an example of developing a Google Spreadsheet coded to translate vocabulary words for English Language Learners: [Google Translate Sample](#)

Evaluation Tools

The formal assessment for this unit will not only be the final science fair board, but also the journal observations, group work, and presentations. Teachers can create a checklist or formal rubric, and/or have students develop a list of necessary requirements.

Unit 4 - Talk Like a Scientist: Advocacy for English Language Learners

Timeline for Completion

This unit can be taught simultaneously with the other three units, or can be taught in a stand-alone unit lasting approximately 1-2 weeks.

Objectives & Standards

WIDA Standard 1 – Language for Social and Instructional Purposes

English language learners communicate for social and instructional purposes within the school setting.

WIDA Standard 2 – Language for Language Arts

English language learners communicate information, ideas and concepts necessary for academic success in the content area of language arts.

Social Justice Standards: 20. Students will plan and carry out collective action against bias and injustice in the world and will evaluate what strategies are most effective.

CCSS.ELA-LITERACY.SL.3.4 - Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

CCSS.ELA-LITERACY.SL.5.4 - Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

CCSS.ELA-LITERACY.SL.5.5 - Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.

Materials

- Assorted art materials
- Access to technology (Laptop, Desktop Computers, Printer)
- Additional Materials as Needed

Step-by-Step Completion Guide

Pre-Teach

Before beginning the unit, it is important to review core vocabulary and themes from the unit. Students should have selected a service-learning project topic and established criteria for success, as well as their audience. This could range from other students or staff, to a wider audience online or community members. The theme of the project itself should be voted on and student-led. You could also offer a choice board if students have a difficult time designing their own project. *(See Appendix)*

Small Group or Partner Work

To make the project more manageable, assign tasks to small groups of students. Be sure to assign roles and expectations. For students who are fluent writers and speakers of their native language, encourage them to create multimodal or bilingual texts that can be shared with family members.

Celebration

To culminate the four units, it is important to take time to not only celebrate the hard work the students have done, but also showcase their final projects. I would encourage

you to have an open house (in-person or virtually) that invites families and other stakeholders to view students' final projects.

Supports & Modifications

Similar to prior units, students with ELP Levels 1-3, would benefit from a graphic organizer or template with transitional phrases to help them. In particular, a choice board with clearly outline steps will guide them on their Service-Learning project. Beginner English Language Learners work best with sentence frames and simple sentences to guide their speaking and writing. It allows them to focus on building vocabulary. In this particular unit, working with partners and small groups with native speaking peers will be an important scaffold.

To help support students in their native language, you can utilize Google Translate. Here is an example of developing a Google Spreadsheet coded to translate vocabulary words for English Language Learners: [Google Translate Sample](#)

Evaluation Tools

The formal assessment for this unit will be the culminating project that students select to do. They will set criteria for success with the teacher's input. During the open house or showcase of students' projects, I encourage you to put out post-it notes or virtual comment boards to allow community members to give feedback to students on their progress.

Resources

RESOURCES FOR BACKGROUND

Alex's Lemonade Stand. "Childhood Cancer Facts." Available at: www.alexslimonadestand.org/thefacts. 2021.

Derose, K Pitkin. "Immigrants and Health Care Access, Quality, and Cost." *Medical Care Research and Review*. 2009.

Harris, Gardiner. "CT Scans Cut Lung Cancer Deaths, Study Finds." *The New York Times*: November 4, 2010.

Kushi, LH. "American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention." 2006.

Mendoza, Fernando. "Health Disparities and Children in Immigrant Families." *Official Journal of the American Academy of Pediatrics*. 2009.

National Cancer Institute. Available at: <https://www.cancer.gov/> 2021.

Oakley, Ann. "Health and Cancer Prevention: Knowledge and Beliefs of Children and Young People." *BMJ*. 1995.

PBS. "Cancer: The Emperor of All Maladies." <https://www.pbs.org/video/story-cancer-emperor-all-maladies-highlights/> 2015.

Siddiqi, A. "The role of health insurance in explaining immigrant versus non-immigrant disparities in access to health care." *Social Science & Medicine*. 2009.

TED Talks. https://www.ted.com/playlists/63/a_cure_for_cancer

Wade, Nicholas. "Stem Cells May Be Key to Cancer." 2006.

Weinberg, Robert A. "How Cancer Arises." *Scientific American*. September 1996.

Yoshikawa, H. "The effects of poverty on the mental, emotional, and behavioral health of children and youth: implications for prevention." *American Psychologist*. 2012.

BOOKS FOR EDUCATORS

Dale, Tara. "The Science Teacher's Toolbox." 2020.

Ferlazzo, Larry. "Navigating the Common Core with English Language Learners." 2016.

Gonzalez, Valentina. "Reading and Writing with English Learners: A Framework for K-5." 2020.

WIDA. "WIDA English Language Development Standards Framework, 2020 Edition K-12." 2020.

BOOKS FOR THE CLASSROOM

Ahmed, Haitham. "Cell Biology for Babies." 2020.

Bather, Zoë and Joe Sharpe. "Around the World with the Ingredients: A Taste of Adventure." 2016.

Bayer, Vanessa. "How Do You Care for a Very Sick Bear?" 2019.

Beaty, Andrea. "Ada Twist, Scientist." 2016.

Carlin, Lydia. "The Human Body Science Vocabulary Readers." 2008.

Charlesworth, Liza. "Science Vocabulary Readers Set: Human Body." *Scholastic*. 2009.

DK Publishing. "A life like mine: How children live around the world." 2002.

DK Publishing. "Are You What You Eat?" 2015.

DK Publishing. "Children Just Like Me: A new celebration of children around the world." 2016.

DK Publishing. "Healing Foods." 2013.

DK Publishing. "Human Body: A Visual Encyclopedia." 2018.

Driscoll, Laura. "I Want to Be a Doctor." 2018.

Evans, Shira. "National Geographic Readers: Helpers in Your Neighborhood." 2018.

Gates, Stefan. "Science You Can Eat." 2019.

Joshi, Anjali. "ABC Science Book." 2020.

Karst, Patrice. "The Invisible String." 2018.

Lamothe, Matt. "This is How We Do It: One Day in the Lives of Seven Kids around the World." 2017.

National Geographic. "Edible Science." 2015

Polacco, Patricia. "The Lemonade Club." 2007.

Scott, Liz & Jay. "Alex and The Amazing Lemonade Stand." 2012.

Sliweski, Jessica Reid. "Cancer Hates Kisses." 2017.

Stier, Catherine. "When a Kid Like Me Fights Cancer." 2019.

Tinkham, Kelly. "Hair for Mama." 2007.

Wilsdon, Christina. "National Geographic Kids: Ultimate Bodypedia: An Amazing Inside-Out Tour of the Human Body." 2014.

Appendix

Standards

The objectives of the unit will include the follow key skills as outlined in the WIDA English Language Development Standards and grade appropriate Common Core Standards.

- *Standard 1* – Language for Social and Instructional Purposes
English language learners communicate for social and instructional purposes within the school setting.
- *Standard 2* – Language for Language Arts
English language learners communicate information, ideas and concepts necessary for academic success in the content area of language arts.
- *Standard 3* – Language for Mathematics
English language learners communicate information, ideas and concepts necessary for academic success in the content area of mathematics.
- *Standard 4* – Language for Science
English language learners communicate information, ideas and concepts necessary for academic success in the content area of science.
- *Standard 5* – Language for Social Studies
English language learners communicate information, ideas and concepts necessary for academic success in the content area of social studies.

This unit also relies on the *Learning for Justice Framework for Anti-Bias Education*. Their social justice standards focus on creating equity in the school system. Educators can familiarize themselves with the standards here:

<https://www.learningforjustice.org/sites/default/files/2020-09/TT-Social-Justice-Standards-Anti-bias-framework-2020.pdf>

Teaching Resources

The following resources are intended solely to be suggested templates for classroom instruction and should be adjusted to support different grade level or Language Proficiency Levels. Please feel free to design your own and/or alter the template to fit your students' needs.

Suggested Vocabulary Lists

Unit 1 - World	Unit 2 - Data	Unit 3 - Lab	Unit 4 - Advocate
Ambulance Contagious Diet Doctor Health Hospital Illness Insurance Medical Medicine Prescription Sickness Virus Vitamin	Data Analysis Bar Graph Line Plot Pictograph Infographic Cancer Disease Disparities Exercise Life expectancy Overweight Underweight	Balance or Scale Fruit Flies Dropper Goggles Gloves Magnifying Glass Medical Examiner Microscope Mixture Petri Dish Scientific Method Stethoscope Surgeon Syringe Test Tube Thermometer	Advertising Carcinogen Commercial Consumer Dependence Exercise Exposomics Exposure Healthy Habits Legal vs Illegal Lifestyle Manipulation Persuasive Preventative Risks Truth Campaign

My Vocabulary Tracker

A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P	Q	R
S	T	U	V	W	XYZ

Vocabulary Word Map

MY WORD: _____

<i>Definition</i>	<i>Synonyms</i>
-------------------	-----------------

<i>Use it in a sentence</i>	<i>Draw a picture</i>

Note Collector

<p align="center"><u>Source</u></p> <p align="center"><u>Pages</u></p>	<p align="center"><u>What I learned</u></p> <p align="center">Ex. I learned that _____.</p> <p align="center">Children in _____ tend to _____.</p>
<p align="center"><u>Notes</u></p> <p align="center">A fact about _____ is _____.</p>	<p align="center"><u>Questions I have</u></p> <p>Why do _____? Where is _____?</p> <p>What does _____? How might _____?</p>

Graph Project (sample)

<u>Pictograph</u>		<u>Bar Graph</u>		
Topic	★ ★			■
Topic	★	■		■

Topic	★ ★ ★			
		TOPIC	TOPIC	TOPIC
<u>Line Plot</u>		<u>Analysis</u>		
		The most ____ The least ____ ____ is great than ____ I notice ____ One reason why could be ____		

Science Journal (Template)

Date: _____

Illustration:	Observation:
	<i>I noticed... I saw.... I wonder...</i>

Service-Learning Choice Board

Advertisement	Pamphlet or Signage	Presentations
<i>Create a magazine ad by hand, using Google Suite or Canva.com</i>	<i>Design a pamphlet or fliers to teach others</i>	<i>Prepare a presentation for other classes</i>
Public Service Announcement	Your Choice	In-person volunteering

<i>Create a movie or Flipgrid</i>		<i>Work with a local organization to volunteer</i>
Slide Deck <i>Make an educational Google Slideshow to share with families</i>	Persuasive Letter or Essay <i>Write a letter to a public figure about your concerns</i>	Fundraiser <i>Host a fundraiser for a local organization</i>

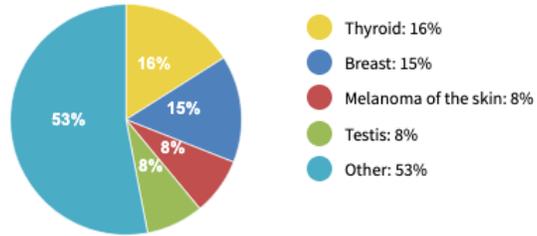
Data Bank

<i>Graphs from http://seer.cancer.gov</i>
Cancers Impacting American Young Adults

New Cancer Cases, 2021

Estimated New Cancers Among AYAs in the U.S. in 2021	88,260
% of All New Cancer Cases at Any Age	4.6%

Common Types of New Cancers Among AYAs

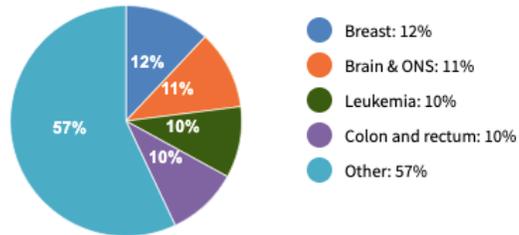


Distribution based on age-adjusted rates of new cases. SEER 21, 2014–2018.

Cancer Deaths, 2021

Estimated Cancer Deaths Among AYAs the U.S. in 2021	9,130
% of All Cancer Deaths at Any Age	1.5%

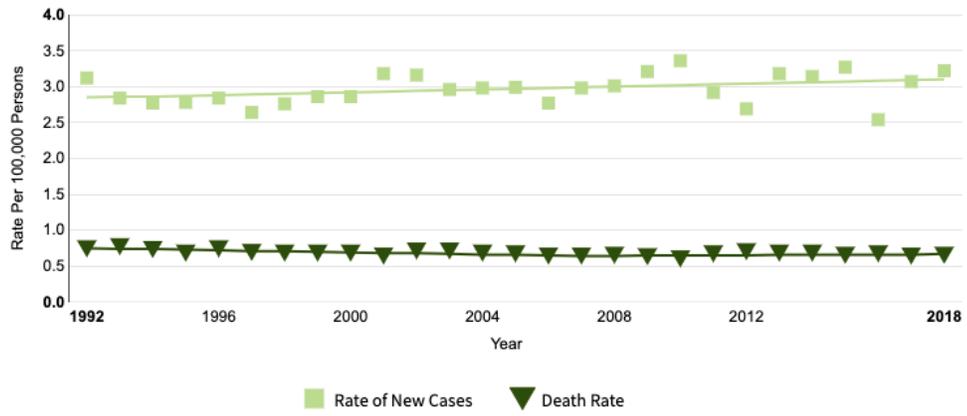
Common Cancer Types Causing Death Among AYAs



Distribution based on age-adjusted death rates. U.S. Mortality, 2014–2018.

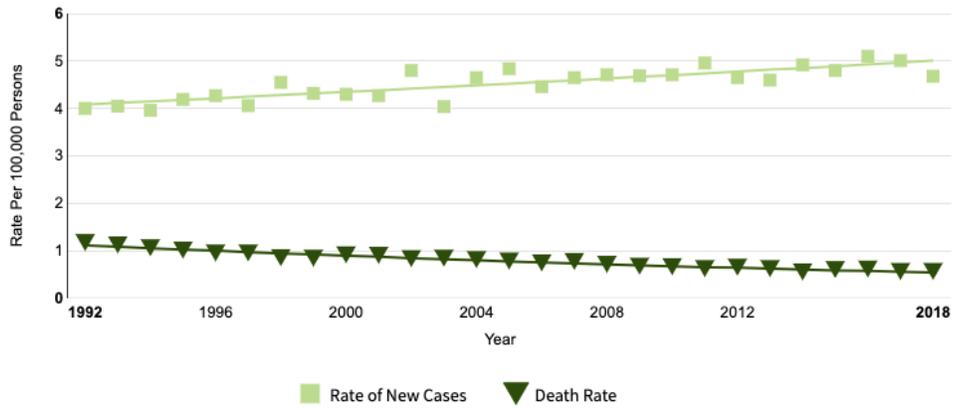
Childhood Cancers

At a Glance



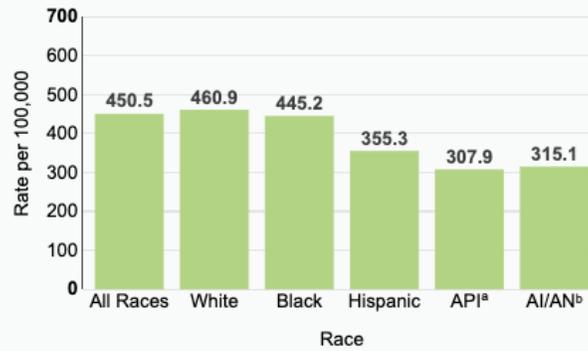
Childhood Leukemia

At a Glance



Cancer Disparities

Rates of New Cancer Cases by Race/Ethnicity



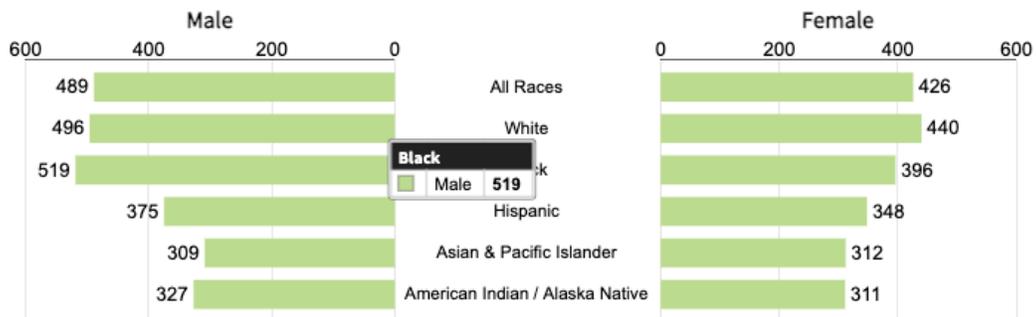
^a Asian/Pacific Islander, ^b American Indian / Alaska Native

Source: SEER 21 2014–2018, Age-Adjusted Rate per 100,000

Cancer Disparities

How Many People Are Diagnosed with Cancer by Sex and Race/Ethnicity?

For all cancers combined, black men have the highest rate of new cancer diagnoses, and Asian/Pacific Islander men have the lowest rate of new cancer diagnoses. The rate of new cases for men was 489.2 per 100,000 men per year. The rate of new cases for women was 425.6 per 100,000 women per year. These rates are age-adjusted and based on 2014–2018 cases.

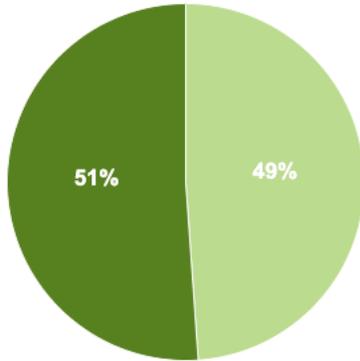


Source: SEER 21 2014–2018, Age-Adjusted Rate per 100,000

Cancer Sites by Sex and Race/Ethnicity

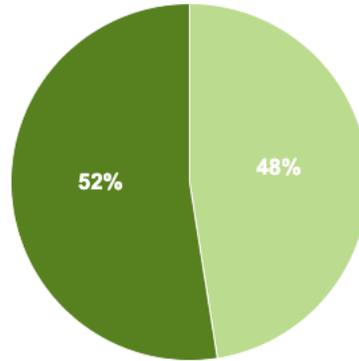
For all cancers and races/ethnicities combined, men are more likely to be diagnosed with cancer and to die from cancer than women.

Estimated New Cancer Cases (2021):
All Races/Ethnicities



Female: 927,910 (49%)
Male: 970,250 (51%)

Estimated Cancer Deaths (2021):
All Races/Ethnicities

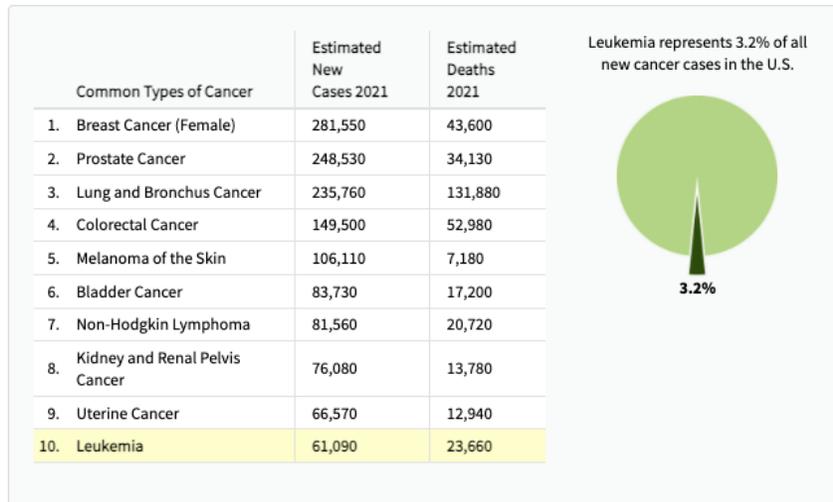


Female: 289,150 (48%)
Male: 319,420 (52%)

Leukemia

How Common Is This Cancer?

Compared to other cancers, leukemia is fairly common.



In 2021, it is estimated that there will be 61,090 new cases of leukemia and an estimated 23,660 people will die of this disease.

More data and graphs are available at: <https://seer.cancer.gov/statfacts/>

Key Words

Cancer, cancer biology, health disparities, childhood cancer, healthy habits, diet, language, advocacy, immigrant, ESL, ELL, TESOL

Abstract

How schools can extend their reach to truly support immigrant communities with health education, especially beginning with our youngest learners? What language is necessary for students to understand cancer-related technology, diagnosis, and treatments? In what ways can we help ELLs advocate for themselves and their families within the healthcare system? The following unit developed from this seminar is entitled “Doctors to Diet: Health Awareness in Education.” Within this 2nd-5th grade unit, the guiding focus will be to build English Language Learners Vocabulary and Speaking Stems surrounding health and the healthcare field. We will begin exploring information about culture, health, and lifestyles of children around the world, use data to research about healthcare statistics, and transition to learn about healthcare, including the different types of careers, tools, and people that help us when we are sick. It is during this part of the unit that students will act like a scientist and conduct small experiments using the scientific method. Lastly, the unit will talk about advocacy surrounding healthcare and compare our healthcare system to norms in other countries. Students will consider how they can advocate for themselves and teach others about physical and emotional health, especially surrounding cancer and other illnesses.