

Health Education Framework

May 2019 Revision

This document was approved by the State Board of Education on May 8, 2019. The 2019 *Health Education Framework* is currently being edited for publication. Contact the California Department of Education Curriculum Frameworks and Instructional Resources Division with questions regarding this document at healtheducationframework@cde.ca.gov.

Note: This document contains excerpts from the State Board of Education approved Health Education Framework. The final, published version of the framework is anticipated to be available in June 2021.

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Chapter 1: Introduction

Educating students about environmental health, from both a personal and community health perspective, is a strand in the standards that continues from kindergarten through high school where students are expected to learn, among other issues, about the impacts of air and water pollution on health. These topics tie directly to California's Environmental Principles and Concepts (EP&Cs), adopted by the State Board of Education in 2004. The EP&Cs are an important piece of the curricular expectations for all California students that teachers can incorporate through their many connections with the health education standards, specifically by focusing instruction on the personal and community effects of environmental issues.

California's Environmental Principles and Concepts

Principle I—The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.

Principle II—The long-term functioning and health of terrestrial, freshwater, coastal and marine ecosystems are influenced by their relationships with human society.

Principle III—Natural systems proceed through cycles that humans depend upon, benefit from, and can alter.

Principle IV—The exchange of matter between natural systems and human societies affects the long-term functioning of both.

Principle V—Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

A complete listing of the California Environmental Principles & Concepts (EP&Cs), including their detailed descriptions, is provided on the California Education and the Environment Initiative website. This initiative is run through the CalRecycle program and the document is available on the CalRecycle website.

Concerns about achieving environmental justice are a critical social dimension of health education because of the potential broad-ranging community effects of environmental issues such as air pollution, water pollution, and toxic chemicals released by industrial and other activities. California's Environmental Protection Agency (CalEPA) states that the "principles of

environmental justice call for fairness, regardless of race, color, national origin or income, in the development of laws and regulations that affect every community's natural surroundings, and the places people live, work, play and learn." Other definitions speak to the: equitable distribution of environmental risks and benefits; fair and meaningful participation in environmental decision-making; recognition of community ways of life, local knowledge, and cultural differences; and the capability of communities and individuals to function and flourish in society.

Rigorous standards-based instructional methods and strategies can support students in achieving more positive health-behavior outcomes and addressing the complex community and global health issues that impact the natural world and their personal health.

Chapter 3: Transitional Kindergarten Through Grade Three

Excerpt

This interdisciplinary classroom example incorporates health education, science, and environmental topics.

Classroom Example: I Can Make a Difference!

Purpose of the Lesson: Students discover an environmental health challenge in their school or local community and create and implement a project to help resolve the challenge. By working together to resolve the littering and waste that occur in the lunch area, they recognize that they can help resolve a local environmental health problem.

Standards:

- 3.8.2.P Encourage others to promote a healthy environment (Health Promotion).
- 3.1.6.P Discuss how reducing, recycling, and reusing products make for a healthier environment (Essential Concepts).
- 3.1.5.P Describe how a healthy environment is essential to personal and community health (Essential Concepts).
- EP&C I: The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.
- EP&C V: Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.
- CA NGSS 3–5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- CA NGSS SEP-3 Planning and Carrying Out Investigations

Supplies:

- Poster paper
- Printer to print photos or online pictures

Students in Mr. A's class are learning how the littering and food waste that takes place every day during lunchtime can spread beyond the schoolyard and may pollute the nearby coastal waters. Earlier in the year they learned how polluted water can affect their health and the health

of their community (CA EP&C I). They are starting to make connections between their actions and the health of the environment.

To kick off this activity, Mr. A takes the students to the lunch area and asks them to make a drawing and write brief notes about what they saw. After they have made their drawings and notes, Mr. A starts a class discussion with the questions, “What did you see in the lunch area?” and “How did it get there?” Students share, for example, that they saw paper and plastic litter on the ground, the overflowing trash cans, and some food getting thrown away. It was a windy day and several said that they saw litter blowing out of the lunch area, into the schoolyard, and off into the street.

Mr. A asked students to work in small groups and discuss why it is important to come up with a solution to the problem of food waste and litter on campus (CA EP&C V). With those reasons in mind, he tells students to develop some simple criteria to compare the design solutions they create to resolve these problems (CA NGSS 3–5-ETS1-1). Based on the criteria they established, students develop a variety of design solutions. When the small groups report out, they share ideas such as: starting a compost bin and placing it near the lunch area to collect waste food; telling the custodian what they saw and asking that the garbage cans be emptied twice during lunch to prevent overflow; and conducting a poster campaign to tell other students about the environmental health problems caused by waste and littering.

The students decide to start an “I Can Make a Difference!” poster campaign. After just two weeks of monitoring they observed that the amount of litter and food waste on campus had decreased by 50% (CA NGSS SEP 3).

Chapter 4: Grades Four Through Six

Excerpt

Classroom Example: Is That in My Water?

Purpose of the Lesson: Students use a scientific model, they previously developed, that describes the movement of matter among plants, animals, decomposers, and the environment to think about how pollutants might move into their food and affect their health. They discover that there are direct connections between their health, the movement of potentially harmful materials from human activities like cleaning, and the safety of the water they drink, the air they breathe, and the food they eat. Students develop pamphlets to share what they have learned with their parents and other students.

Standards:

- 5.5.1.P Use a decision-making process to determine personal choices that promote personal, environmental, and community health. (Decision Making)
- 5.6.1.P Monitor progress toward a goal to help protect the environment. (Goal Setting)
- 5.8.1.P Encourage others to minimize pollution in the environment. (Health Promotion)
- EP&C I: The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.
- EP&C II: The long-term functioning and health of terrestrial, freshwater, coastal and marine ecosystems are influenced by their relationships with human societies.
- EP&C V: Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.
- CA NGSS 5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- CA NGSS 3–5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Supplies:

Pamphlet paper

Printer to print photos or online pictures

Colored pencils and markers

Students in Ms. K's class are learning that they can make personal choices about their individual growth, physical activity, and nutrition. In science, they have been investigating how matter moves among plants, animals, decomposers, and the environment. They discovered the byproducts of human activities enter natural systems and may alter cycles as matter moves between the air and soil and among plants, animals, and microbes (CA EP&C IV). After students have completed Ms. K's science lessons about the movement of matter and constructed their models showing how matter moves within ecosystems, they are ready to investigate how pollution can enter air and water.

Ask students, "What examples of human-made products or activities inside or outside the school building can you think of that might affect their health or the health of the environment?" After they have shared their ideas, Ms. K leads students on a walk around the building looking for human-made products and activities that might affect their health. On their excursion, students notice that the custodian is using chemicals to clean the floors and windows, and some of them mention that there is a strong smell to these products.

When they get back to the classroom, the students soon realize that they have more questions than answers. They ask Ms. K to invite the custodian to their class so that they can ask questions. Working together, they develop a series of questions including: "What do you use to clean the windows and floors and why does it smell so bad?" "Where do you put the dirty water and cleaning materials when you finish?" and "Are all those chemicals safe to use?"

The custodian tells students that the school is required to use only "green" cleaning products that have been proven to be safe to people and the environment (CA EP&C V). He explains that this decision was made to help minimize harmful chemicals getting into our drinking water because our health depends on clean water and air (CA EP&C I).

Ms. K asks the students to look at the model they previously created about the movement of matter through ecosystems. She tells them to create a new model, based on the ecosystem example, that:

- identifies the activities at school that products pollutants;
- shows how pollutants can move from an activity, like cleaning, into the air and water;
- describes how potentially harmful materials can affect the safety of the water they drink, the air they breathe, and the food they eat; and
- illustrates some of the direct connections between human health and environmental pollutants.

The students decide to develop pamphlets to share what they have learned with their parents and other students. Using everything they have learned and the information summarized in their models, different student teams take on the writing of various parts of the pamphlet to teach about many topics including: what pollutants are; how pollutants affect our health; simple changes that will decrease the pollution we release into the environment; and why healthy ecosystems are important to people.

Ms. K guides students in developing a simple survey they can use at home to monitor which cleaning products their family uses and how much of each they use. Students conduct their surveys two weeks before and two weeks after they share their pamphlets with their families. They bring the survey results to class, where they work as a group and discover that many families have begun using “green” cleaning products and have decreased the amounts they use by 25 percent.

Chapter 5: Grades Seven and Eight

Excerpt

Classroom Example: Is That in Our Air and Water?

Purpose of the Lesson: Students gather and analyze information about air, water, or noise pollution in their local community. Using their data, they construction an argument that supports or refutes an explanation of the differential effects of pollution problems on various parts of their local community. Based on their arguments and discussions, the teacher guides a conversation about the topic of environmental justice. Students identify potential solutions to one of their local environmental problems and develop a campaign to information the community about their environmental concerns and potential solutions.

Standards:

- 7–8.1.9.P Identify ways that environmental factors, including air quality, affect our health (Essential Concepts).
- 7–8.1.10.P Identify human activities that contribute to environmental challenges (e.g., air, water, and noise pollution) (Essential Concepts).
- 7–8.1.11.P Describe global influences on personal and community health (Essential Concepts).
- 7–8.2.2.P Analyze how environmental pollutants, including noise pollution, affect health (Analyzing Influences).
- 7–8.6.1.P Establish goals for improving personal and community health (Goal Setting).
- 7–8.6.2.P Design a plan to minimize environmental pollutants, including noise at home and in the community (Goal Setting).
- 7–8.8.2.P Demonstrate the ability to be a positive peer role model in the school and community (Health Promotion).
- Environmental Principle and Concept (EP&C) I: The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.
- EP&C II: The long-term functioning and health of terrestrial, freshwater, coastal and marine ecosystems are influenced by their relationships with human societies.
- EP&C V: Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

- California Next Generation Science Standards MS-ESS3. Influence of Science, Engineering, and Technology on Society and the Natural World: All human activity draws on natural resources and has both short- and long-term consequences, positive as well as negative, for the health of people and the natural environment (MS-ESS3-1).

Supplies:

Dependent on the information campaign that students choose to implement

Students in Mr. T's class are learning to identify ways that environmental factors, including air quality, affect our health and how human activities contribute to environmental challenges like air, water, and noise pollution. As part of this lesson series, they are also investigating how environmental pollutants, including noise pollution, can affect both their personal and community health. Mr. T teaches in a school with higher than average childhood asthma rates, so he wants to introduce students to the topic of environmental justice and give them the opportunity to investigate how pollutants can differentially affect various parts of a community and regions of the state.

To initiate the lesson, Mr. T asks students to recall the word *pollution*, which means the contamination of the environment (including air, water, and soil) with chemicals or other damaging materials, including noise. As they begin the discussion, several of the students mention that one of their sisters or brothers is suffering from asthma and when they visited a doctor, they heard that asthma can be caused by air pollution. Mr. T asks if the students are aware of any other pollution problems in their local community. A few say that, when they walk home, they walk by a small creek that seems to have water that looks dirty. Mr. T tells students that for a few days, they are going to investigate pollution issues in the local community and gather information about the affects pollution could have on their personal health or the health of others in the community.

After discussing a few of the possible local environmental pollution problems, students divide into teams and begin their research, gathering, reading, and synthesizing information from multiple sources about air, water, or noise pollution in their local community. Mr. T reminds them to use the research skills they have been developing in science and English language arts to assess the credibility, accuracy, and possible bias of each publication. Students also evaluate the research methods used and describe how the findings are supported or not supported by evidence. Mr. T asks students to take into consideration the differential impacts, if any, on the

health of the community where the pollution is taking place, in comparison with other local communities.

When they complete their collection of scientific data and other information, Mr. T reminds students of the practices they have learned about constructing oral and written arguments supported by empirical evidence and scientific reasoning. With these practices in mind, the student teams work together to create arguments that support or refute an explanation of the differential effects of the local pollution problem(s) on various areas in their local community. Based on the arguments they develop and the data they collected and analyzed, Mr. T guides students through a discussion of the concept of environmental justice.

Mr. T has been working closely with Ms. J, the science teacher. Together, they facilitate a class discussion about which local environmental issue(s) the students want to help their community more fully understand. With a focus on their issue(s), students investigate a variety of sources to identify potential solutions to the problem and who in the community might be able to work on the implementation of a solution. Ms. J draws the students' attention to the idea that the byproducts of human activities enter natural systems and move between human social systems and natural systems, sometimes resulting in human health problems (EP&C IV).

Students decide to develop a campaign to inform community members of their environmental concerns and potential solutions. Mr. T and Ms. J work together to guide students through the process of setting specific action goals including an advocacy plan for the alternative possible resolutions for the problems. Mr. T reminds them that there are many factors that influence decisions about the use of natural resources and how pollutants are handled in different communities (EP&C V).

The students develop a plan for informing people in their community about local environmental problems and how they may be affecting individual and community health. An important aspect of the students' campaign is sharing the possible solutions that they discovered and encouraging their families and other community members to work to promote solutions to the local environmental problems.

Chapter 6: Grades Nine Through Twelve

Excerpt

Classroom Example: Why is That in Our Community?

Purpose of the Lesson: Students investigate an environmental health issue on campus that leads them to a study of environmental health topics in their local community. Using data they collected on campus about water quality and environmental issues in their community, they analyze the results and describe the impact of air, water, and soil pollution, as well as waste management, on personal and community health. In the process, they learn about several agencies that promote health and protect the environment and discover how they can keep informed about local environmental issues.

Standards:

- 9–12.1.12.P Identify global environmental issues (Essential Concepts).
- 9–12.1.13.P Describe the impact of air and water pollution on health (Essential Concepts).
- 9–12.2.3.P Analyze how environmental conditions affect personal and community health (Analyzing Influences).
- 9–12.2.4.P Discuss ways to stay informed about environmental issues (Analyzing Influences).
- 9–12.3.4.P Identify government and community agencies that promote health and protect the environment (Accessing Valid Information).
- 9–12.8.2.P Encourage societal and environmental conditions that benefit health (Health Promotion).
- Environmental Principles and Concept (EP&C) I: The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.
- EP&C IV: The exchange of matter between natural systems and human societies affects the long-term functioning of both.

- EP&C V: Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.
- California Next Generation Science Standard HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

Supplies:

Access to campus locations where they can investigate water issues on campus and opportunities to obtain data from CalEnviroScreen the California Communities Environmental Health Screening Tool available from the California Environmental Protection Agency Office of Environmental Health Hazard Assessment.

Students in Ms. K's class are learning about the effects of environmental conditions on their personal and community health. After a facilitated class discussion, several students comment on the bad taste and odor of the water that they drink from some of the school's drinking fountains. Several students wondered out loud how safe the water is in their whole community. They asked Ms. K. if they could work on a project to investigate water quality in their community.

Ms. K tells them that she is familiar with an online environmental health screening tool called, "CalEnviroScreen." She explains CalEnviroScreen is a screening tool that evaluates the burden of pollution from multiple sources in communities and it will allow the students to study the levels of pollution in the community and how it may be affecting environmental health. Ms. K tells students that CalEnviroScreen will allow them to compare different communities in California based on potential exposures to pollutants, adverse environmental conditions, socioeconomic factors, and the prevalence of certain health conditions. She mentions that CalEnviroScreen presents data for areas called, "census tracts," that they can use to compare results in different parts of their community or make comparisons to other communities.

Ms. K divides students into teams and assigns each team to compare a census tract in their community with a census tract in a neighboring community and census tract in an area of their choosing in another part of California. The teams' task is to compare the CalEnviroScreen data related to three environmental topics that are known to affect human health: water (using data on groundwater threats, impaired water, and drinking water); toxic chemicals (using data on pesticides, cleanups, and toxic releases); air pollution (using data on the ozone, particulate matter [PM 2.5], diesel, and traffic); and waste (using data on hazardous waste and solid

waste). They will compare these results against environmental impacts using data for asthma, low birth weight, and cardiovascular disease.

In preparation for their analysis and reporting, Ms. K reviews three of California's EP&Cs with students by asking them to identify an environmental topic or environmental health problem that relates to each of the EP&Cs. Students identify many examples including:

Principle I: The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.

Example: local water quality issues and their potential impacts on the health of individuals and communities

Principle IV: The exchange of matter between natural systems and human societies affects the long-term functioning of both.

Example: byproducts of mining, manufacturing, and agricultural activities entering the air, water, and soil

Principle V: Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

Example: environmental health and environmental justice concerns related to water pollution in the local community and how they differentially affect various parts of a community

Following their research and analysis, student teams are asked to report back to the class, summarizing their comparisons of their three census tracts. They use charts to depict the results about water, toxic chemicals, air pollution, and waste. They use graphs to compare the environmental effects they discovered with the environmental health impacts they analyzed.

Several of the teams mention that they see a pattern that relates to the socio-economic conditions in the communities they compared. Some of the students mention that they see these issues as directly related to EP&C V, because the places where waste, toxic chemicals, and manufacturing facilities are located depend on a variety of political, economic, and social factors. Ms. K explains that differential environmental health impacts on communities with varied socio-economic conditions is a major health topic identified as "environmental justice." Since

many of the students express a strong interest in this topic, Ms. K invites a guest speaker from a community-based health organization to provide additional information and answer students' questions about environmental justice.

Recognizing the potential impacts of the environmental health issues they have been studying, a group of students encourages the class to develop a plan for informing people in their community about local environmental problems and how they may be affecting individual and community health. An important aspect of the students' campaign is encouraging their families and other community members to work to promote solutions to local environmental health problems.