

AP<sup>®</sup> Computer Science Principles

# FOOD INSECURITY AND HUNGER

Teaching Module



AP<sup>®</sup> with WE Service

## College Board

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## AP® Equity and Access Policy Statement

College Board strongly encourages educators to make equitable access a guiding principle for their AP programs by giving all willing and academically prepared students the opportunity to participate in AP. We encourage the elimination of barriers that restrict access to AP® for students from ethnic, racial, and socioeconomic groups that have been traditionally underrepresented. Schools should make every effort to ensure their AP classes reflect the diversity of their student population. College Board also believes that all students should have access to academically challenging coursework before they enroll in AP classes, which can prepare them for AP success. It is only through a commitment to equitable preparation and access that true equity and excellence can be achieved.

## WE

WE is a movement that empowers people to change the world through a charitable foundation and a social enterprise. Our service learning program, WE Schools, supports teachers' efforts to help students become compassionate leaders and active citizens, empowering them to take action on the issues that matter most to them. Currently partnered with 18,400 schools and groups, and backed by a movement of 5.3 million youth, we are engaging a new generation of service leaders and providing resources for a growing network of educators.

Our free and comprehensive library of lesson plans is designed to be adapted to meet the needs of any partner school, regardless of students' grades, socioeconomic backgrounds, or learning challenges. Skills development through the program also increases academic engagement and improves college and workplace readiness. Third-party impact studies show that alumni of the program are more likely to vote, volunteer, and be socially engaged. Learn more at [WE.org](https://we.org).

## About the Partnership

College Board and WE share a passion for enriching students' learning experiences and developing well-rounded citizens. By combining the academic challenge and rigor of AP® with WE's Learning Framework, AP® with WE Service creates an opportunity for students to consider their classroom work and how it applies to real-world issues, while working closely with their peers to address relevant needs in their local and global communities.

AP<sup>®</sup> Computer Science Principles

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# Food Insecurity and Hunger

Teaching Module



GENEROUSLY SUPPORTED BY





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# Using This Module

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AP<sup>®</sup> with WE Service provides a collection of resources to support your planning and implementation of the program. This teaching module, Food Insecurity and Hunger, is one of two sample lesson guides for AP<sup>®</sup> Computer Science Principles. As you read through this module, refer to the AP<sup>®</sup> with WE Service Program Guide for additional activities that will support your students' learning throughout the program.

## Program Guide

The AP<sup>®</sup> with WE Service Program Guide contains a robust collection of service oriented activities and resources that support the WE Learning Framework. Use these case studies, news articles, and student activities to supplement and strengthen your students' understanding and application of core service learning skills.

<https://apcentral.collegeboard.org/pdf/program-guide.pdf>

## WE Resources

WE offers a library of resources to support you in delivering content on social topics and issues, as well as the tools and the inspiration for your students to take social action, empower others, and transform lives—including their own. Access our resources at [WE.org/weschoolsresources](https://we.org/weschoolsresources). An AP<sup>®</sup> with WE Service Program Manager will support you in planning your instruction with access to the resources that are the right fit for you. Digital Social Issues Sessions will connect your students with a motivational speaker or facilitator to deliver an online workshop on global and local issues and topics. Speakers and facilitators can also be booked for school-wide speeches and smaller group or class workshops on site. Full-day Youth Summits provide immersive issues education and action planning opportunities for students. Throughout the module, you will also see tables of optional activities and resources you can pull into your instruction.

## Digital Portfolio

Report your students' performance through the AP<sup>®</sup> with WE Service digital portfolio. Step-by-step directions for using the digital portfolio are available on the program website: [collegeboard.org/apwe-resources](https://collegeboard.org/apwe-resources).

## How-To Videos

Also available on the program website are how-to videos that explain what AP<sup>®</sup> with WE Service is all about, as well as the steps you need to take to get it going in your class: [collegeboard.org/apwe-videos](https://collegeboard.org/apwe-videos).

# Module Sections

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**THE PLAN SECTION** contains information to help you decide how and when you will fit this module into your AP<sup>®</sup> curriculum.

**PART 1: INVESTIGATE AND LEARN** defines and explores the module topic at local and global levels, and within the context of your AP<sup>®</sup> course curriculum. This will be the majority of your required in-class instruction hours and it is where your students will start to make connections between your AP<sup>®</sup> course content and the module topic.

**PART 2: ACTION PLAN** guides students as they form teams and begin developing their plan for achieving one local and one global action.

**PART 3: TAKE ACTION** is where students put their plans into action. As they work, they should keep track of what they do and collect artifacts that capture their efforts. During this part, you may need to guide students as they encounter obstacles or help them maintain their motivation.

**PART 4: REPORT AND CELEBRATE** describes how students can showcase their projects and share their accomplishments. Presentations and celebrations may be in your class or in the community.

PLAN

TEACH: PART 1

TEACH: PART 2

TEACH: PART 3

TEACH: PART 4

## **Teaching Module**

# **Food Insecurity and Hunger**

“We have everything we need—the tools, the technology, the people. It is time to deliver, time to move from the conference room to our countries, and to deliver together a Zero Hunger world.”

– **ERTHARIN COUSIN, EXECUTIVE DIRECTOR,  
UNITED NATIONS WORLD FOOD PROGRAMME**





# Getting to Know the Topic

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## Food Insecurity and Hunger: Globally

People are considered food secure when they have availability and adequate access at all times to sufficient, safe, and nutritious food to maintain a healthy and active life. Food security is a complex sustainable-development issue, linked to health through malnutrition, but also to sustainable economic development, environment, and trade.

Food insecurity can occur when the cost of food is too high in certain regions, or a family is struggling to make ends meet. At times, the challenges are related to a community's geography. A community located in a dry climate may have difficulties with farming, while others can be affected by natural disasters like floods or drought, which might destroy an entire season's crops.

### Fast Facts

- ▶ If female farmers had the same resources as male farmers according the Food and Agriculture Organization of the United Nations (FAO), up to 150 million more people would be fed—that's roughly the population of Russia.
- ▶ Additionally, the FAO states that approximately 60% of people are employed by agriculture services in less developed countries.
- ▶ According to the United Nations, world would need an additional \$267 billion per year to end world hunger by 2030.

### Taking Action Globally

There are a number of ways that students can take action in their own school and community to help developing communities around the world improve their food security. Some ideas include:

- ▶ Volunteer at an organization that works for global issues—many organizations offer ways to get involved on their websites and in their offices.
- ▶ Create a podcast or website that educates people about food insecurity in a particular region or country.
- ▶ Develop a social media campaign targeted at the United Nations, government bodies, and other leaders to ask for added resources on the issue.

Another option is to support and fundraise for WE Villages program. Students can support this program by visiting [WE.org/we-schools/educator-resources](https://www.we.org/we-schools/educator-resources) to get ideas and resources for taking action on global issues.



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**According to the United Nations, more than 2 billion people do not have enough food to lead a healthy, active, productive life.**

# Getting to Know the Topic

## Food Insecurity and Hunger: Locally

Over the past decade, reliance on supplemental nutrition programs has more than doubled, and the strain to afford healthy, nutritious food has been felt in communities across America.

Hunger is an issue that can affect people in different situations. Some people need support over longer periods, but most require help only occasionally or for a short period of time. For those who cannot find support, hunger leads to long-term health conditions, especially in young children.

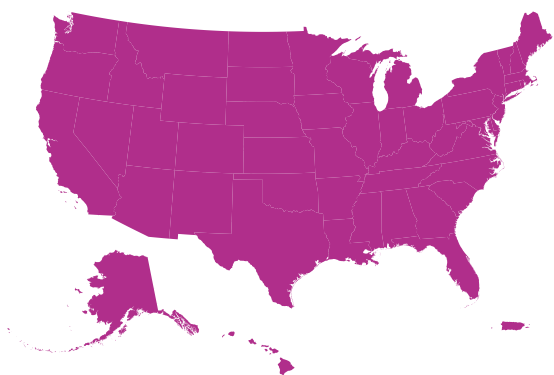
## Fast Facts

- ▶ According to the USDA, more than 11 million children live in food insecure homes.
- ▶ Oxfam states, approximately 25 million individuals who access food banks in the U.S. are from working households, and most report having to depend on the food bank as a regular part of their survival.
- ▶ According to Feeding America, more than 70 billion pounds of food from manufacturers, growers, and retailers goes to waste—more than enough food to feed the 42 million people struggling with hunger in the U.S.

## Taking Action Locally

Within their local or national community, students can:

- ▶ Work with a local organization such as food banks, community gardens, local farms and other community based organizations that are addressing the topic.
- ▶ Collect goods and items that support the needs of organizations and their local beneficiaries (e.g., non-perishable items for food banks, warm clothes and personal hygiene products for the local homeless shelter, etc.)
- ▶ Create and deliver an educational workshop to raise awareness about the topic and its local impact with a strong call to action that leads to enacting change.
- ▶ Attend a meeting of a local government authority, such as the school board or town council, and learn about how these groups are working to solve the issue. Suggest changes or voice support for additional funding to address food insecurity and hunger.



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**According to the USDA, 12% of American households live in a state of food insecurity.**

# Taking Action

## Global and Local Service Projects

### WE Villages

For more than two decades, WE Villages has been engineering an international development model to end poverty. It works. It's proven. It's scalable.

We partner with developing communities around the world and collaborate on projects and programs that equip families with the tools they need to break the cycle of poverty through our five Pillars of Impact: Education, Water, Health, Food, and Opportunity. These pillars address the five primary causes of poverty with holistic and sustainable solutions that work in tandem to transform communities.

### Why Food Insecurity and Hunger?

When communities develop the skills and infrastructure to produce healthy, nutritious food year-round, they have the fuel and the tools they need to grow new opportunities for future generations.

- ▶ Food security improves educational outcomes at school. When communities provide school lunches, attendance rates go up and students have the energy and focus for higher learning.
- ▶ More efficient farming practices, like retaining walls, multi-story gardens, and drip irrigation, allow communities to conserve water and resist drought.
- ▶ Fresh, nutritious food provides the nutrients for children to develop healthy minds and bodies and families to live healthier lifestyles with less vulnerability to disease.
- ▶ Food secure communities are prosperous communities. When farmers learn how to increase their crop yields and store their surplus, and price food for sale, they can make the leap from subsistence farming to earning a livelihood.

### Five Pillars of Impact



Education



Water



Health



Food  
Security



Opportunity

# Planning Your Instruction

## Food Insecurity and Hunger

### Purpose

In this module, students will develop an understanding of AP<sup>®</sup> Computer Science Principles and discover how computer science can be used as a tool to improve challenges throughout the world. This will be accomplished by introducing students to computer science big ideas of Programming and Algorithms, Data, and Global Impact while exploring the potential computer science holds to improve food insecurity and hunger both locally and globally. Opportunities to practice developing and using both data and procedural abstraction have been incorporated for students.

Ensure students are collecting evidence of their work as they go along. Following list includes pieces of work you may want to collect through out the year:

- ▶ Photos
- ▶ Interviews
- ▶ Scripts
- ▶ Screenshots
- ▶ Posters
- ▶ Maps
- ▶ Reflections
- ▶ Thank you notes

### Overview

As presented in the Introduction, this teaching module contains four parts. These are also the four rubric topics you will assess your students on in the digital portfolio:

- ▶ **Part 1: Investigate and Learn:** Practice application development while investigating causes and effects associated with access to health care. These lessons also relate to a variety of service learning concepts, such as the necessity of research to understanding a topic and its effects, and the ways that a topic is connected between local and global levels.
- ▶ **Part 2: Action Plan:** Guide students as they form teams, develop their action plans, and reflect on their ideas.
- ▶ **Part 3: Take Action:** Provide students with suggestions for how to navigate obstacles, overcome conflicts, record actions, and reflect on their work.
- ▶ **Part 4: Report and Celebrate:** Support students as they create portfolios, celebrate their actions, and complete a final reflection on their experiences.

Throughout Parts 1–4, activities that are required for the Recognition Rubric are labeled with an icon (see Icon Legend on page 16). Optional activities that will help students design and complete their service projects, but are not required by the program, are listed in tables throughout each part. These optional activities are available in the AP<sup>®</sup> with WE Service Program Guide or on the WE website, as indicated in the tables.

The parts within the module may be implemented at a variety of different times based on the preferences and needs of schools, teachers, and administrators.

# Course Alignment

Based on the current AP<sup>®</sup> Computer Science Principles Course and Exam Description, here are the elements of the curriculum framework addressed in this module.

BIG IDEA	ENDURING UNDERSTANDING	LEARNING OBJECTIVE
AAP – Algorithms and Programming	AAP-2 The way statements are sequenced and combined in a program determines the computed result. Programs incorporate iteration and selection constructs to represent repetition and make decisions to handle varied input values.	AAP-2.N For data list operations: <ul style="list-style-type: none"> <li>a. Write expressions that use list indexing and list procedures. <b>2.B</b></li> </ul>
	AAP-3 Programmers break down problems into smaller and more manageable pieces. By creating procedures and leveraging parameters, programmers generalize processes that can be reused. Procedures allow programmers to draw upon existing code that has already been tested, allowing them to write programs more quickly and with more confidence.	AAP-3.A For procedure calls: <ul style="list-style-type: none"> <li>a. Write statements to call procedures. <b>3.B</b></li> <li>b. Determine the result or effect of a procedure call. <b>4.B</b></li> <li>AAP-3.B Explain how the use of procedural abstraction manages complexity in a program. <b>3.C</b></li> <li>AAP-3.C Develop procedural abstractions to manage complexity in a program by writing procedures. <b>3.B</b></li> </ul>
DAT – Data	DAT-2 Programs can be used to process data, which allows users to discover information and create new knowledge.	DAT-2.A Describe what information can be extracted from data. <b>5.B</b> DAT-2.D Extract information from data using a program. <b>2.B</b> DAT-2.E Explain how programs can be used to gain insight and knowledge from data. <b>5.B</b>
IOC – Impact of Computing	IOC-1 While computing innovations are typically designed to achieve a specific purpose, they may have unintended consequences.	IOC-1.A Explain how an effect of a computing innovation can be both beneficial and harmful. <b>5.C</b> IOC-1.B Explain how a computing innovation can have an impact beyond its intended purpose. <b>5.C</b>

## Connections to AP<sup>®</sup> Computer Science Principles Focus Area

Some content from the AP<sup>®</sup> Computer Science Principles Course and Exam Description is identified as more challenging for students based on AP<sup>®</sup> Chief Reader commentary from previous AP<sup>®</sup> Computer Science Principles Exams. This content is referred to as a focus area. The activities in this module provide opportunities for students to engage with this content and practice the associated skills needed to grasp these concepts.

When developing abstractions, students need to:

- ▶ Develop procedural abstraction that leverage the use of parameters to allow their code to accommodate different input values.
- ▶ Use the context of their program code when explaining how their developed abstraction manages the complexity of their program and is necessary, rather than writing in general about how abstraction manages complexity.

# WE Service Concepts

Based on the WE Learning Framework, here are the particular WE Service concepts addressed in this module.

STUDENTS WILL UNDERSTAND THAT...	STUDENTS WILL BE SKILLED AT...	STUDENTS WILL KNOW THAT...
<ul style="list-style-type: none"> <li>• Social issues are complex and, therefore, research is essential to understanding them</li> <li>• Often times, local and global issues can be interconnected</li> <li>• Understanding the role of cultural, social, and economic factors is vital to the development of solutions</li> <li>• People have a civic identity, which provides opportunities for public action</li> <li>• Serving the greater community can be meaningful for the individual and the community</li> <li>• Creating social change happens through a set of skills, including creating action plans</li> <li>• Carrying out an action plan requires personal and group resilience</li> <li>• Individual behavior and decisions toward a social issue impact the larger global context of that issue</li> </ul>	<ul style="list-style-type: none"> <li>• Working collaboratively in teams</li> <li>• Working collaboratively with community partners (where applicable)</li> <li>• Researching an identified social issue on local and global levels</li> <li>• Creating an action plan</li> <li>• Successfully implementing an action plan</li> <li>• Educating others (classmates, community partners, school, etc.) about a social issue</li> <li>• Presenting actions and results to wider audiences</li> <li>• Applying critical thinking</li> <li>• Thinking entrepreneurially</li> <li>• Demonstrating leadership</li> <li>• Reflecting on learning about the social issue</li> <li>• Reflecting on working to create social change</li> </ul>	<ul style="list-style-type: none"> <li>• AP® course content is relevant to addressing social issues and topics, and provides knowledge toward creating working solutions</li> <li>• There are organizations working for social change on the social issue</li> <li>• They have an important role to play as students, employees, volunteers, and as citizens to have a positive impact on their local and global community</li> </ul>

See full WE Learning Framework and details at [WE.org/we-schools/program/learning-framework](https://we.org/we-schools/program/learning-framework).

# Icon Legend

As described in the AP<sup>®</sup> with WE Service Program Guide, the WE Learning Framework identifies the most relevant core skills students will develop as they progress through this module.



ARGUMENT FORMATION



INFORMATION LITERACY



LEADERSHIP SKILLS



ORGANIZATION



ACTION PLANNING



RESEARCH AND WRITING



CRITICAL THINKING



REFLECTION

Throughout each part of this module, look for these additional icons to identify the following opportunities and notes:



### Teacher Tip:

Suggestions for ways to implement or modify the activities with students.



### Focus Area Alert:

Opportunities for students to practice content and skills that are pivotal for improving student performance in the AP<sup>®</sup> course and on the AP<sup>®</sup> Exam (see page 14 for a description of the AP<sup>®</sup> Computer Science Principles Focus Areas addressed in this module).



### Check for Understanding:

Recommendations for ways to formatively assess student progress and mastery of the content and skills practiced in the activities.



Look out for how the lesson aligns to one of the International Society for Technology in Educations (ISTE) standards for innovation in education. Today's students must be prepared to thrive in a constantly evolving technological landscape. The ISTE Standards for Students are designed to empower student voice and ensure that learning is a student-driven process.

For deeper learning and activation visit <https://www.we.org/en-US/our-work/we-schools/ap/> to access the ISTE Standards Guide.

Pay particular attention to activities labeled with the red checkmark icon:



### Recognition Checkmark:

Identifies activities that are required in the Recognition Rubric. We encourage you to use the most effective instructional approaches to meet your students' needs. You may use alternative activities if they achieve the same outcomes as the required activities and align with the Recognition Rubric. Review the rubric here: <https://apcentral.collegeboard.org/pdf/apwe-recognition-rubric.pdf>





# Part 1: Investigate and Learn

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## Investigate and Learn is divided into the following lessons:

- ▶ Lesson 1: Overview of the Issue
- ▶ Lesson 2: Causes and Effects
- ▶ Lesson 3: Future Concerns and Solutions

Every student in every AP® with WE Service course will do the following as part of their learning and investigation:

- ▶ Learn about the issue locally and globally within the context of the course
- ▶ Explore causes and effects locally and globally
- ▶ Analyze impacts for the future on their local community and the world

## WE Service Framework



# Overview for Part 1: Investigate and Learn

In this module, students will begin to develop the following Enduring Understandings...

**AAP-2** The way statements are sequenced and combined in a program determines the computed result. Programs incorporate iteration and selection constructs to represent repetition and make decisions to handle varied input values.

**AAP-3** Programmers break down problems into smaller and more manageable pieces. By creating procedures and leveraging parameters, programmers generalize processes that can be reused. Procedures allow programmers to draw upon existing code that has already been tested, allowing them to write programs more quickly and with more confidence.

**DAT-2** Programs can be used to process data, which allows users to discover information and create new knowledge.

**IOC-1** While computing innovations are typically designed to achieve a specific purpose, they may have unintended consequences.

ACTIVITY	PG #
<b>LESSON 1: OVERVIEW OF THE ISSUE</b>	
Activity: Identifying Questions about Food Insecurity and Hunger	21
Activity: Computational Innovations and Food Insecurity	26
<b>LESSON 2: CAUSES AND EFFECTS</b>	
Activity: Problem Tree	30
Activity: Causes and Effects of Food Insecurity	32
Activity: Local and Global Scale of Food Insecurity	33
<b>LESSON 3: FUTURE CONCERNS AND SOLUTIONS</b>	
Activity: Needs Assessment and Solution Tree	36
Activity: Raising Awareness of Food Insecurity	39
Activity: Hunger Simulation	41
Activity: Utilizing Data at a Food Bank	45
<b>REFLECT: INVESTIGATE AND LEARN</b>	
Activity: Making Connections with Students' Lives	49
Activity: Summarizing the Investigation	49

# Lesson 1: Overview of the Issue

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In this lesson, students will be introduced to a problem that many people are facing in the world: food insecurity and hunger. Students will investigate what food insecurity and hunger are and be introduced to how computing innovations are being used to impact and improve food insecurity and hunger both locally and globally.

## Learning Goals:

- ▶ Identify the difference between food insecurity and hunger.
- ▶ Identify beneficial effects of computing innovations that are being used to help improve food insecurity and hunger.
- ▶ Identify trends in food insecurity and hunger based on available data.

## Definitions:

**Computing Innovation:** An innovation that includes a program as an integral part of its functionality. A computing innovation can be physical (e.g., self-driving car), nonphysical computing software (e.g., picture editing software), or a nonphysical computing concept (e.g., e-commerce).

**Food Insecurity:** The lack of sustainable physical or economic access to enough safe, nutritious, and socially acceptable food for a healthy life. Food insecurity may be chronic, seasonal, or temporary.

**Hunger:** The painful sensation of weakness caused by the need for food.

## Additional Resources:

“The view from Above: Satellites Inform Decision-Making for Food Security”

<https://www.rti.org/rti-press-publication/view-above/fulltext.pdf>

“Can an app help reduce food insecurity on campus?”

<https://universitybusiness.com/can-an-app-help-reduce-food-insecurity-on-campus/>



## Teacher Tip:

Students could complete a website or blog to document their progress and highlight their research, brainstorming, and problem solving as they progress through the module. A tool students could use is Google Sites.

# Activity: Identifying Questions about Food Insecurity and Hunger



Students will begin analyzing data related to food insecurity and hunger to understand its importance.

## Course Alignment:

- ▶ DAT-2.A Describe what information can be extracted from data. **5.B**
- ▶ DAT-2.D Extract information from data using a program. **2.B**

**Suggested Timing:** 45 minutes

**Materials:** Student Workbook

## Guiding Questions:

What story does the data tell us about food insecurity? How are people in the U.S. affected by food insecurity and hunger?

## Real World Application:

In a large discussion group, have students share their definitions and what they know about the following terms and programs. Be sure to provide formal definitions for students.

- ▶ Food Insecurity
- ▶ Hunger
- ▶ Supplemental Nutrition Assistance Program (SNAP)
- ▶ Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)
- ▶ USDA Farm to School Grant Program
- ▶ USDA Microloan Program

The following resources can be used to introduce students to the concept of food insecurity and hunger, as well as the importance of nutrition assistance programs.

- ▶ “What is Food Insecurity?”: <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/>
- ▶ “The Supplemental Nutrition Assistance Program (SNAP): History, Politics, and Public Health Implications”: <https://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2019.305361>

## Discussion Group:

Students engage in an interactive small group discussion.

Take a few minutes to brainstorm as a group what questions or concerns students have about food insecurity and hunger. Let students know that some of their questions can be answered by looking at publicly available data.

Provide students with the Identifying Questions Student Worksheet. Students will need to develop non-trivial questions that will provide a focus for their investigation. These questions should reflect the rationale and overall direction for their investigation.

For example, students may propose the question, “In 2019, what month had the largest number of lunches served through supplemental nutrition programs?” While this question can certainly be easily answered using data, it doesn’t allow us to tell a story or narrative related to food insecurity and hunger. A better question that provides a direction for their investigation might be, “During what time of year will supplemental nutrition programs need more volunteers and have greater funding challenges?”

Have student groups investigate the available Excel data files related to food insecurity and hunger.

- ▶ Food and Nutrition Service U.S. Department of Agriculture: <https://www.fns.usda.gov/pd/overview>
- ▶ United States Department of Agriculture Economic Research Service: <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx#foodsecure>

Have students work in groups of 3–4 to brainstorm questions about food insecurity and hunger. They should use the data that is available to guide their question development. Each group should generate 3 questions they think could be answered using the data provided.

Have students write a first draft of the questions in the first column, and then as needed, revise questions to provide a focus, rationale, and overall direction for their investigation.

Once each group has developed their list of questions, have them share their questions and develop a master list of potential questions with the class. As necessary and as a whole class, work to further revise questions to ensure they are non-trivial and meaningful to understanding food insecurity and hunger issues.

Have each group select 2–3 questions from the collaborative class list of questions. These questions should be related and meaningful so that they can be used as a basis to tell a story or solve a problem through their data investigation. Students should select appropriate data sets and process the data to extract information and answer their questions.

Finally, students will use what they learned in their investigation to synthesize answers to their questions and use the data to tell a story. A data story builds a narrative around the data and its visualizations. This narrative could be used to educate someone on an issue, sway opinions, or present a solution to a problem.

Have students present their data story. This can be accomplished in several ways, depending on your time constraints. For example, student might:

- ▶ create a short video and share on your LMS
- ▶ present to family members
- ▶ post their questions and findings to a class discussion board
- ▶ present to another class or after school club
- ▶ create an elevator speech to raise awareness for food insecurity and hunger



### Teacher Tips:

- ▶ It is helpful to establish some ground rules or norms for discussion groups prior to using this strategy. Present students with the rules beforehand or take some time to develop these rules as a class.
- ▶ Some of your students' families may be recipients of local services such as Supplemental Nutrition Assistance Program (SNAP); Women, Infants, and Children (WIC); or free and reduced lunch at school. As you lead discussion, you will want to be sensitive of the impact that these programs may have on your students and utilize the established ground rules to ensure that discussions are respectful and inclusive.
- ▶ Use a shared document, survey, or form to have groups pool their questions.



### Check for Understanding:

Have students examine the graph about food insecurity found at the following sources:

<https://public.tableau.com/profile/feeding.america.research#!/vizhome/MaptheMealGap-ChildFoodInsecurity/ChildFoodInsecurity>

Ask the students to describe the effects of food insecurity and hunger in their state by looking at this data.



### ISTE Standard - Global Collaborator:

Students explore local and global issues and use collaborative technologies to work with others to investigate solutions.



Have students use the Identifying Questions about Food Insecurity and Hunger Worksheet, found in the Student Workbook.



NAME: \_\_\_\_\_

TEAM MEMBERS: \_\_\_\_\_

## Identifying Questions about Food Insecurity and Hunger Worksheet

To have a meaningful data investigation, the questions we pose need to be non-trivial. These questions should reflect the rationale and overall direction for your investigation.

Below is an example question that is trivial as it doesn't really provide a rationale or direction for why we are conducting our investigation. Revise this question to be more meaningful.

QUESTION	REVISED QUESTION
<p><b>Sample answer:</b> Answers will vary. In 2019, what month had the largest number of lunches served through supplemental nutrition programs?</p>	<p><b>Sample answer:</b> Answers will vary. During what time of year will supplemental nutrition programs need more volunteers and have greater funding challenges?</p>

We can use publicly available data to better understand the current issues around food insecurity and hunger to answer our questions and develop a story about the challenges.

Explore the following list of resources that contain Excel data files that may be useful in answering your questions related to food insecurity and hunger:

- ▶ Food and Nutrition Service U.S. Department of Agriculture: <https://www.fns.usda.gov/pd/overview>
- ▶ United States Department of Agriculture Economic Research Service: <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx#foodsecure>

In small groups, develop a list of 3 questions below. Record your questions in the first column. After you have taken a first draft of brainstorming questions, look at each question and revise it to ensure that you have included a rationale and direction to focus your investigation. Put your revised questions in the second column.

QUESTIONS	REVISED QUESTIONS

Select 2–3 questions from the collaborative class list of questions. These questions should be related and meaningful to you so that they can be used as the basis to tell a story or solve a problem through your data investigation. The questions you select do not have to have been developed by your group.





# Activity: Computational Innovations and Food Insecurity



Overview: Students will better understand how computational innovations could be used to help food security.

## Course Alignment:

- ▶ IOC-1.A Explain how an effect of a computing innovation can be both beneficial and harmful. **5.C**
- ▶ IOC-1.B Explain how a computing innovation can have an impact beyond its intended purpose. **5.C**

**Suggested Timing:** 90 minutes

**Materials:** Student Workbook, highlighters, and sticky notes

## Guiding Questions:

What does food insecurity mean? What are the ramifications of not having access to adequate food? What existing programs serve families in need? Can computing and computational innovations be used to create social change?

## Real World Application:

Use this video to introduce students to the issue of food insecurity and hunger and how computing innovations and AI are being used to improve the condition around the world. <https://www.voanews.com/episode/artificial-intelligence-can-help-fight-global-hunger-3789526>

## Jigsaw:

Each student in a group reads a different text or passage, taking on the role of “expert” on what was read. Students share the information from that reading with students from other groups and then return to their original group to share their new knowledge.

Model this activity by having students read the following article from Microsoft: **“Feed the world: how the USDA is using data and AI to address a critical need.”** Ask students to share a description of the computing innovation. Have students identify any beneficial and harmful effects the computing innovation might have, either on food insecurity or other issues related to our society, the economy, or our culture.

Now, create five groups of students. Assign each group to read one of the following articles. After they have finished reading, have the groups discuss the computing innovation and what changes it could make to food insecurity. Have students complete the Jigsaw Reading Worksheet in their Student Workbook for their computing innovation.

“The Future of AI Research in Africa,”

<https://www.technologyreview.com/s/613848/ai-africa-machine-learning-ibm-google/>

“Meet the Organizations Using Tech to End World Hunger,” <https://www.forbes.com/sites/nicholasfearn/2018/11/08/meet-the-organizations-using-tech-to-end-world-hunger/#3e5ae40b302d>

“How WhyHunger Uses Google Maps to Connect People to Grassroots Community Food Sources,” <https://whyhunger.org/category/blog/how-whyhunger-uses-google-maps-to-connect-people-to-grassroots-community-food-sources/>

“Five Innovative Tech Solutions to Help End Global Hunger,” <https://www.responsiblebusiness.com/channels/agriculture-food-nutrition-news/five-innovative-tech-solutions-to-help-end-global-hunger/>

“How Blockchain Could Solve Food Security Issues,” <https://www.forbes.com/sites/jenniferhicks/2018/10/19/the-new-food-movement-and-how-blockchain-could-solve-food-security-issues/#5ad36c794f2f>

After students have read and discussed their computing innovation, assign students to groups where each group member has read a different article. Have students share their computing innovation and what changes it could make to food insecurity. As each student shares, the other students should record a summary on their Jigsaw Reading Worksheet.

Provide time for students to report back to their original groups before coming together for a whole group discussion.

**As a class, discuss the following questions:**

- ▶ When you think about the challenges of food insecurity, what issues do you think computer science could help to address?
- ▶ When you consider the future of computational innovations, how could they be used to increase food security and reduce hunger?



### Check for Understanding:

In a large group discussion, ask students to share any potential harmful effects of the computing innovations they explored.



### ISTE Standard - Computational Thinker:

Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.



Have students use the Jigsaw Reading Worksheet, found in the Student Workbook.



NAME: \_\_\_\_\_

TEAM MEMBERS: \_\_\_\_\_

## Jigsaw Reading Worksheet

As you are reading your assigned text or passage, record an overview to describe the computing innovations and what beneficial effects they could have on food insecurity.

**My resource:**

\_\_\_\_\_

Reading Overview:

\_\_\_\_\_

\_\_\_\_\_

As your classmates share out, make sure to record a summary of the reading and any important points.

**1. Resource:** \_\_\_\_\_

Summary:

\_\_\_\_\_

\_\_\_\_\_

**2. Resource:** \_\_\_\_\_

Summary:

\_\_\_\_\_

\_\_\_\_\_

**3. Resource:** \_\_\_\_\_

Summary:

\_\_\_\_\_

\_\_\_\_\_

**4. Resource:** \_\_\_\_\_

Summary:

\_\_\_\_\_

\_\_\_\_\_

## Lesson 2: Causes and Effects

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Now that students have a better understanding of what food insecurity and hunger are, they will begin investigating their causes and effects. Students will then explore interactive maps to learn more about the local and global effects of hunger and food insecurity.

### Learning Goals:

- ▶ Identify the causes of food insecurity and hunger.
- ▶ Identify the effects of food insecurity and hunger.
- ▶ Consider potential solutions to food insecurity and hunger.
- ▶ Describe what food insecurity looks like on a local and global level.

### Definitions:

**Malnutrition:** Lack of proper nutrition, caused by not having enough to eat, not eating enough of the right things, or being unable to use the food that one does eat.



### Teacher Tip:

Students will be analyzing graphical displays. It may be helpful to go over some common language to use when describing displays.

## Activity: Problem Tree



Students will learn more about the issue they are tackling as they apply what they have learned, along with their critical thinking skills, to consider the causes and effects of the problem presented through the issue.

Have students look at the Problem Tree graphic organizer, which helps guide students in thinking about and articulating the issue as a problem, and then going further by breaking down the causes and effects of the problem. This is necessary before exploring steps needed to address the problem, as it allows students to consider the depth and even the breadth of an issue. Display a larger version of this graphic organizer, perhaps projected on to a screen, and explain the three sections.

Begin at the center of the tree with the problem.

### **Problem:**

The issue that is being examined. Because it is not as apparent as the effects, the core problem itself sometimes takes longer to identify. Then go to the roots, which is the investigation of the causes.

### **Causes:**

Issues, situations, factors, or phenomena that have led to the problem. Prompt exploration of causes by asking, “Why does the problem exist?” Encourage students to think about the “causes of causes”—the multiple layers of factors that contribute to a problem. Repeat this exercise and think further about the causes of the next levels of causes.

And finally to the leaves, which explore the effects.

### **Effects:**

Results created by the problem. As with causes, encourage students to explore multi-layered effects, or “effects of effects.” At first, this part of the issue may appear to be easy to tackle, but without addressing the root cause, only addressing the effects is like trimming leaves and branches—they grow back quickly. Students should also consider the multi-layered effects, or “effects of effects” that can arise when a problem goes unaddressed. Students should always ask: “then what happens?” The more students drill into the effects, the more they will deepen their critical thinking and analysis.

Now have students look at the Problem Tree graphic organizer. Guide students in thinking through the process of cause and effect. Use a simplified, non-issue related example first, such as:

Problem: I am often late getting to school.

Cause: Perhaps I did not hear my alarm or got distracted as I was getting ready.

Effect: I am missing instruction, falling behind, and feeling frustrated, etc.



Have students use the Problem Tree worksheet, found in the Student Workbook.



NAME: \_\_\_\_\_

TEAM MEMBERS: \_\_\_\_\_

(1 of 1)

## Problem Tree

In your Problem Tree graphic organizer, start by writing the problem in the trunk of the tree, and then look at the causes and effects of the issue. Keep digging to go deeper on the issue to find its supporting and root causes.

### Leaves/branches: Effects

These are the results created by the problem. At first, this part of the issue appears easy to tackle, but when leaves and branches are trimmed, they grow back quickly. Consider the multi-layered effects, or “effects of effects,” that can arise when a problem goes unaddressed. Always ask: “Then what happens?”

Ex. Diet-related chronic diseases

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### Trunk: Problem

This is the key issue that is being studied. Because it is not as apparent as the leaves, the core problem itself sometimes takes a little longer to identify.

Ex. Nutrient-deficient diet

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### Roots: Causes

These are the situations or factors that have led to the problem. When exploring the root causes of a problem, ask yourself “Why does this problem exist?” Dig deeper to consider the “causes of causes”—the multiple layers of factors that contribute to a problem.

Ex. Insufficient income

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Problem Tree Worksheet: Copyright © 2018 WE. All rights reserved.

# Activity: Causes and Effects of Food Insecurity



Students will investigate different presentations of data around the causes and effects of hunger and food insecurity. They will then discuss the information they explored.

## Course Alignment:

- ▶ DAT-2.A Describe what information can be extracted from data. **5.B**

**Suggested Timing:** 45 minutes

**Materials:** Sticky notes, [Hunger and Food Insecurity Walk presentation](#)

## Guiding Questions:

What are the causes of hunger and food insecurity? What lasting effects do hunger and food insecurity have on people?

## Real World Application:

Have students watch the following video with the questions below in mind. Afterward, have students share their reactions with a partner and ask a few students to share out to the class.

- ▶ What are the immediate vs. long-term effects of a being food insecure?
- ▶ How can the cyclical nature of food insecurity be broken?

Illuminating Intersections: Hunger and Health

[https://www.youtube.com/watch?v=iBAly-xxo1g&feature=youtu.be&disable\\_polymer=true](https://www.youtube.com/watch?v=iBAly-xxo1g&feature=youtu.be&disable_polymer=true)

## Gallery Walk:

Print the Hunger and Food Insecurity Walk slides and post them around your classroom or throughout your school. Each student should have sticky notes and a pen or pencil.

**Part 1.** Have students consider the following questions individually as they go through the walk. Using the sticky notes, they should take notes on their reaction to the information and leave the notes on that particular slide.

- ▶ What are your general reactions to the information? What questions does this information raise for you?
- ▶ What's the story behind the data and information?
- ▶ What further information would be helpful?
- ▶ What solutions can you think of to address the issues raised by these data?

**Part 2.** Students should choose a slide that resonated with them most, was most surprising, or was most concerning to them. Have students stand by the slide of most interest. Students who have selected the same slide should take a few minutes to discuss their reactions with one another and brainstorm computational solutions to address the issue.

**Part 3.** Students will discuss as a class their reactions to the data and information as well as their ideas and potential solutions to decrease hunger and food insecurity.



### Teacher Tip:

If space is a concern, this activity could be adapted to be a virtual tour with students taking their own individual notes. Then form small groups based on the slide they selected in part 2.



### Check for Understanding:

Have students create a slide that highlights efforts to address their chosen data.



## Activity: Local and Global Scale of Food Insecurity



Students will investigate text, graphs, and interactive visualizations to explore and discuss who is affected by food insecurity locally and globally.

### Course Alignment:

- ▶ DAT-2.D Extract information from data using a program. **2.B**

**Suggested Timing:** 45 minutes

### Guiding Questions:

Who does hunger and food insecurity affect locally? Globally? Is hunger and food insecurity different amongst subgroups?

### Think-pair-share:

Students think through a problem alone, pair with a partner to share ideas, and then share results with the class.

**Local Effects:** Students should interact with the [Food Insecurity in the United States Map](#) and answer these questions:

- ▶ How does your county compare to the state you live in?
- ▶ How does your state compare to the country?
- ▶ What parts of the country have the highest rates of food insecurity?

**Global Effects:** Students should look at the [Global Hunger Map](#) and [Hunger and Undernourishment Chart](#).

- ▶ What surprised you about what you saw in the global map?
- ▶ What countries or regions are most affected by hunger?

**Subgroups Affected by Food Insecurity:** Have students review the resources below and explore how different subgroups are affected by food insecurities and hunger. Have students answer the following questions:

- ▶ Why does food insecurity and hunger heavily affect these groups?
- ▶ What was something that surprised you?
- ▶ How might computer programming help reach these groups?

Combating Food Insecurity on Native American Reservations: <http://www.nativepartnership.org/site/DocServer/2017-PWNA-NPRA-Food-Insecurity-Project-Grow.pdf?docID=7106>

Hunger is a Racial Equity Issue: [https://alliancetoendhunger.org/wp-content/uploads/2017/07/Hill-advocacy-fact-sheet\\_\\_HUNGER-IS-A-RACIAL-EQUITY-ISSUE\\_Alliance-to-End-Hunger.pdf](https://alliancetoendhunger.org/wp-content/uploads/2017/07/Hill-advocacy-fact-sheet__HUNGER-IS-A-RACIAL-EQUITY-ISSUE_Alliance-to-End-Hunger.pdf)

Hunger Among Senior Citizens Growing as Population Ages: <https://moveforhunger.org/food-insecurity-among-senior-citizens-growing-population-ages>



### **Teacher Tip:**

Depending on the group, students may want to talk more at a global level, local level, or about different subgroups. The conversation in your class will be based on students' experiences and your community. Supplementing the resources provided here with data on your local community may help students relate to and engage more in the topic.



### **Check for Understanding:**

Have students find an article, visualization, video, or other resource highlighting the work of a local organization helping to decrease hunger and insecurity in your community.



### **ISTE Standard - Knowledge Constructor:**

Students explore local and global issues and use collaborative technologies to work with others to investigate solutions.

# Lesson 3: Future Concerns and Solutions

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Students will investigate what is currently being done to improve food insecurity and hunger at local, national, and global levels. They will also consider improvements to computing innovations that are addressing the issue of food insecurity and hunger.

## Learning Goals:

- ▶ Identify local, national, and global efforts to improve food insecurity and hunger with computer science or technology.
- ▶ Identify ways existing organizations are improving food insecurity and ways they could improve using computer science or technology.
- ▶ Design procedures that could be used in apps to help with food insecurity and hunger.
- ▶ Design procedures that use lists that could be used in apps to help with food insecurity and hunger.

## Materials:

- ▶ AP CSP Exam Reference Sheet
- ▶ Small candies or bingo chips
- ▶ Manipulatives for lists, such as cans or sticky notes

## Activity: Needs Assessment and Solution Tree



Have students carry out research to begin developing an understanding of specific issues and topics related to their broader issue. For example, food insecurity is a big umbrella for many sub-issues (that are equally large, but more focused) that ladder up to the issue of food insecurity and hunger. One sub-issue might be the ability to growing crops in areas susceptible to drought.

This is best done by having student groups carry out research on organizations that are working to combat this issue. Students should use the Needs Assessment Worksheet to carry out an analysis.

Have students use the Solution Tree graphic organizer to keep track of current solutions that are in use to combat the issue of food insecurity and hunger. Model how to go from the center of the proposed solution graphic organizer to the more specific details of the key elements to the solution and the possible outcomes of the solution.

Encourage students to revisit and work in parallel with their Problem Tree cause-and-effect graphic organizer, which can help to ensure that their solutions are addressing actual problems. Students should develop four solutions, and their accompanying key elements and possible outcomes. They should keep track of any sources they used to fill out the graphic organizer.

Walk students through the Solution Tree, starting in the middle.

### Goal:

This is the problem from their Problem Tree, but re-framed as a goal.

Then go to the roots, which is the investigation of the solutions.

### Solutions:

These are the actions needed to solve the problem and achieve the goal stated at the center of the solution tree. When exploring solutions, students should ask, “How will this solve the problem?” Have them dig deeper to think holistically, so that they are looking beyond the short-term and addressing not only the symptoms of the problem but the root causes as well.

And finally to the leaves, which explore the outcomes.

### Outcomes:

These are the results created by the solution. Results may appear as straightforward as having achieved goals, but when students consider the ripple effect and outcomes of sustainable results, the impact is far-reaching and long-lasting. Always ask, “Then what happens?”



Have students use the Solution Tree and Needs Assessment worksheets, found in the Student Workbook.



NAME: \_\_\_\_\_

TEAM MEMBERS: \_\_\_\_\_

## Needs Assessment

The following series of questions helps you to analyze and identify ongoing areas of need within organizations addressing your issue.

1. Identify 3-5 organizations, with at least two of them using technology, working on issues related to the issue your team is working on.

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2. What does each organization do well in response to the issue and/or related issues?

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3. What could each organization do better in its response?

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4. What areas of need related to access to your issue have you learned about that each organization is NOT addressing?

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5. Considering all 3-5 organizations, where are there ongoing needs that are not being adequately addressed?

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6. Considering all 3-5 organizations, where are there ongoing needs that are being addressed successfully, and to which you can add further efforts to support the issue?

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NAME: \_\_\_\_\_

TEAM MEMBERS: \_\_\_\_\_

## Solution Tree

(1 of 1)

In your Solution Tree graphic organizer, start by rewriting the problem from your Problem Tree, and reframing it as a goal at the trunk of the tree. Then consider the different solutions (the roots) and possible outcomes of the solutions (the branches).

### Leaves/branches: Outcomes

These are the results created by the solution. Results may appear as straightforward as having achieved goals, but when you consider the ripple effects and outcomes of sustainable results, the impact is far-reaching and long-lasting. Always ask: “Then what happens?”

Ex. Increasing the capacity for agricultural productivity and sustainable food production systems is necessary to help alleviate the perils of hunger. If done right, agriculture, forestry, and fisheries can provide nutritious food for all and generate decent incomes, while supporting people-centered rural development and protecting the environment.

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### Trunk: Problem

Ex. Poor diet based on food insecurity.

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### Trunk: Goal

Ex. Increase security of nutritious and sufficient food that leads to a healthier diet.

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### Roots: Solutions

These are the actions needed to solve the problem and achieve the goal stated at the center of the Solution Tree. When exploring solutions, ask yourself “How will this solve the problem?” Dig deeper to think holistically, so that you are looking beyond the short-term and addressing not only the symptoms of the problem but the root causes as well.

Ex. Increase production and double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists, and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment. Ensure sustainable food production systems and implement resilient agricultural practices to improve land and soil.

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## Activity: Raising Awareness of Food Insecurity



Students will read an article and discuss how an app could be used to raise awareness of food insecurity and better understand how computational innovations could be used to reduce food insecurity.

### Course Alignment:

- ▶ DAT-2.A Describe what information can be extracted from data. 5.B
- ▶ DAT 2-E Explain how programs can be used to gain insight and knowledge from data. 5.B
- ▶ IOC-1.A Explain how an effect of a computing innovation can be both beneficial and harmful. 5.C

**Suggested Timing:** 45 minutes

**Materials:** Journal or paper

### Guiding Questions:

How could stigma be a factor in food access? How can community voices be used to contribute to food security?  
How could an app be used to raise awareness and help reduce food insecurities?

### Quickwrite:

Students write for a short, specific amount of time about a designated topic related to a prompt. Have students read [New Mobile App Fights Food Insecurity and Stigma](#). After they have finished reading, provide students with 10–15 minutes to complete a Quickwrite exercise using the following questions as guidance.

- ▶ What do I already know about food insecurity?
- ▶ What is something new I learned about food insecurity?
- ▶ Do I understand what the intentions or benefits of this technology are?
- ▶ How does stigma affect food security?
- ▶ Does this information make sense to me?
- ▶ What were the most important points in this reading?
- ▶ How does it fit in with what I already know about food security?
- ▶ Do I still have questions?

In groups of 3 or 4, have students explore the features of the app by visiting the [Abundance](#) website and reflect on the given scenario.

### Suppose an app allows users to access the following data:

- ▶ locations of food resources
- ▶ type of food resource
- ▶ reviews of local sites

What questions can users answer while utilizing this app?

What questions cannot be answered by this app?

What other information might be beneficial to include in this app to help reduce food insecurity?



### **Teacher Tip:**

You can shorten the Quickwrite by having students select one question from the list to write about for 5 minutes. This could be repeated as a warm-up over several days to allow students more opportunities to reflect on what they have learned prior to using the Quickwrite.



### **Check for Understanding:**

Assign students a set of Topic Questions or Practice Exam questions in AP Classroom that are aligned to Topics 2.3 or 2.4 and DAT-2.A and DAT-2.D.



### **ISTE Standard - Innovative Designer:**

Students exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.



## Activity: Hunger Simulation



Students will run through a simulation that models decisions people have to make when living on a budget. Students will then look at a procedure that models a part of the simulation. They will then modify the procedure to add more abstraction.

### Course Alignment:

AAP-3.A

- Write statements to call procedures. **3.B**
- Determine the result or effect of a procedure call. **4.B**

AAP-3.B

Explain how the use of procedural abstraction manages complexity in a program. **3.C**

AAP-3.C

Develop procedural abstractions to manage complexity in a program by writing procedures. **3.B**

**Suggested Timing:** 45 minutes

**Materials:** Student Workbook and 15 candies, bingo chips, or other small objects to represent currency. Smarties

Simulation Resource: <https://drive.google.com/drive/u/2/folders/1aq2pv13M184sBEeAssu9URqSYfLOHCdL>

### Guiding Questions:

How do families decide how to budget their resources? How can a simulation be used to model decision making? How do you write a procedure for a simulation?

### Real World Application:

This video ([https://www.youtube.com/watch?v=OOTNW2-GPF8&feature=emb\\_title](https://www.youtube.com/watch?v=OOTNW2-GPF8&feature=emb_title)) shows a mom having to make tough decisions: Do you buy medicine? Do you buy the healthiest food? While this video focuses on a U.S. household, have students think about how this following activity could be adapted for families in less developed countries. Do priorities change? Are there more limiting factors? What are the commonalities and differences of families facing food insecurity and hunger globally?

### Smarties Simulation

Many people have to make tough decisions on how they will budget for food and what type of food they can afford. This simulation has students think about making those decisions. Provide each student with the **Smarties Simulation Sheet** and 15 candies, bingo chips, or other small objects to represent currency. Have students complete the Smarties Simulation by having them place their 15 objects on the board as currency. They must make a choice for each category.

Once students have had the opportunity to play the Smarties Simulation, have them complete the Smarties Simulation Worksheet.

**Teacher Tip:**

It will be helpful for students to have used procedures prior to this lesson. The example given is written using the AP Computer Science Principles Exam Reference Sheet. Students should refer to the AP Computer Science Principles Exam Reference Sheet when completing the Smarties Simulation activity.

**Check for Understanding:**

Have students write the procedure header for a procedure that determines if someone qualifies for Supplemental Nutrition Assistance Program (SNAP) and based on household size and income.

**ISTE Standard - Empowered Learner:**

Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use, and troubleshoot current technologies, and are able to transfer their knowledge to explore emerging technologies.

**Focus Area Alert:**

This activity provides an opportunity for students to engage with content involving abstractions.



NAME: \_\_\_\_\_

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## Smarties Simulation Worksheet

A software designer was creating a simulation of the Smarties Simulation. The designer created a procedure `remainingValue` to determine how much money you have left. The procedure is intended to return `remaining` which is the amount remaining after making a series of spending choices given a budget of 15. The parameters `a`, `b`, and `c` represent how many in each choice. Remember from the simulation Choice A cost 1 candy, Choice B cost 2 candies, and Choice C cost 3 candies. The procedure `remainingValue` is shown below.

```
PROCEDURE remainingValue(a, b, c)
{
  spent ← 1 * a + 2 * b + 3 * c
  remaining ← 15 - spent
  RETURN(remaining)
}
```

Given a situation where there are 2 candies in Choice A column, 1 in Choice B column, and 2 in Choice C column. Write a call to this procedure using the example:

```
remainingValue(2, 1, 2)
```

What value would be returned?

This call would return 5. The original budget of 15 and 10 candies spent would mean the remaining budget left is 5 candies.

Write a call to the procedure based on the choices you made in the simulation.

Answers will vary. For example, `remainingValue(1, 4, 4)`

What is the return value for your procedure call above?

Answers will vary depending on the call above. For example, if the call is `remainingValue(1, 4, 4)`, the procedure would return -6.

The software designer wants to modify this procedure so it would return the remaining value given a different starting budget. Modify this procedure so that it works for any beginning budget not just 15.

Sample answer:

```
PROCEDURE remainingValue(a, b, c, budget)
{
  spent ← 1 * a + 2 * b + 3 * c
  remaining ← budget - spent
  RETURN(remaining)
}
```

Explain how the modified procedure does a better job of managing complexity than the original. [3 WOLS]

Sample answer:

By adding another parameter to the remainingValues procedure, this procedure will return the remaining value given any budget amount. This allows the procedure to be reusable regardless of the budget rather than having to have unique procedures for different budget amounts.

## Activity: Utilizing Data at a Food Bank



Students will watch a video depicting a food bank and the food bank's operations. Students will then write pseudo code utilizing procedures and lists to help organize the food bank inventory.

### Course Alignment:

AAP-2.N For list operations:

a. Write expressions that use list indexing and list procedures. **2.B**

AAP-3.C Develop procedural abstractions to manage complexity in a program by writing procedures. **3.B**

**Suggested Timing:** 60 minutes

### Guiding Questions:

How can computer programs be used to help efficiency in a food bank? How can procedures and lists be used to help with a food bank's inventory? How can these innovations be used to assess and enhance food stores globally?

### Real World Application:

The Greater Boston Food Bank (GBFB) is the largest hunger relief organization in New England. In 2019, GBFB delivered more than 68 million pounds of food to those in need. Have students watch this video (<https://youtu.be/EJI4MgiI-dU>) and guide them in thinking about how computer programs can help manage inventories, identify needs, and help local and international organizations provide relief to those affected by food insecurity and hunger.

### Utilizing Procedures and Lists:

After students have watched the video, have them form discussion groups. Ask the students to discuss how a food bank could utilize computer programs to achieve efficiency in their warehouse.

In pairs, have students complete the Procedures and Lists for the Food Bank worksheet. Students will be writing procedures and utilizing lists to answer questions based on a food bank's warehouse inventory.



### Focus Area Alert:

This activity provides an opportunity for students to engage with content involving abstractions.



Have students use the Procedures and Lists for the Food Bank worksheet, found in the Student Workbook.



NAME: \_\_\_\_\_

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## Procedures and Lists for the Food Bank

A computer program is used to organize stock at a food bank. Think about how this program could utilize procedures and storing data. Use the following statements to design a program to help organize the food bank's stock of food.

Create your designs using diagrams of your choice or you can use the AP CSP Exam Reference Sheet to represent your program code.

A. A local supermarket has sent a list of counts of different types of cans they plan to be donating. For example, `canCounts` could contain `[5, 10, 5, 15, 23, 30]`. You know that if the number of cans that need to be shelved is more than 1000 you will need to get more volunteers. Write the procedure, `totalInventory` that will find the sum of all items in the list `canCounts`.

**Solution:**

```
PROCEDURE totalInventory(canCounts)
{
    count ← 0
    FOR EACH item IN canCounts
    {
        count ← count + item
    }
}
```

B. The food bank wants to make sure they are well stocked. They would like to be alerted when the number of items they have in inventory is below 40 but greater than 10. The food bank has a list called `itemsInventory` which has the inventory for each item stored in a separate index. Write the procedure `stockNeeded` that will return `true` if the inventory of any item is between 40 and 10 inclusively and `false` otherwise.

**Solution:**

```
PROCEDURE stockNeeded(list)
{
    FOR EACH item IN list
    {
        if(item < 40 AND item >= 10)
        {
            RETURN true;
        }
    }
    RETURN false;
}
```

C. The food bank has a list of all items stocked in the warehouse. Write the procedure `itemAvailable` so that when given a list and an item to search for in the list it returns `true` if the item is found and returns `false` otherwise.

**Solution:**

```
PROCEDURE itemAvailable(list, product)
{
  FOR EACH item IN list
  {
    if(item = product)
    {
      RETURN true;
    }
  }
  RETURN false;
}
```

D. You just received deliveries from two local farms. The local farms give you a list of items in the delivery. The `wardsFarmList` contains the names of all items Ward's Farm delivered and the `allendaleFarmList` contains the names of all items delivered by Allendale Farm.

Write a procedure called `combineLists` to return a new list that is the combination of the two lists. To avoid listing items in the combined list twice, use the procedure `isFound(list, name)`, which returns `true` if `name` is found in `list` and returns `false` otherwise.

For example, if `wardsFarmList` contains

```
["beets", "carrots", "apples", "potatoes", "onions"]
```

And `allendaleFarmList` contains

```
["radishes", "pears", "carrots", "onions", "turnips", "sweet potatoes"]
```

Then `newList` will contain

```
["carrots", "onions"]
```

**Solution:**

```
PROCEDURE combineLists(list1, list2)
{
  combined ← []
  FOR EACH item IN list1
  {
    if(NOT(isFound(combined, item)))
    {
      APPEND(combined, item)
    }
  }

  FOR EACH item IN list2
  {
    if(NOT(isFound(combined, item)))
    {
      APPEND(combined, item)
    }
  }
}
```

E. Deliveries from three different local farms are coming into the food bank. Each farm will provide a list of items they will be delivering. The food bank would like to consolidate these three lists into one list which contains the names of all items, in alphabetical order, with all duplicates removed, as illustrated below.

**For example:**

```
list1
["beets", "carrots", "apples", "potatoes", "onions"]

list2
["radishes", "pears", "carrots", "onions", "turnips", "sweet potatoes"]

list3
["carrots", "beets", "cabbage", "turnips", "cucumbers"]

newList would contain
["apples", "beets", "cabbage", "carrots", "cucumbers", "onions", "pears", "potatoes", "radishes",
"sweet potatoes", "turnips"]
```

Using the following provided procedures, write the `combineLists` procedure that will return a new list of all the items in `list1`, `list2`, and `list3`, in alphabetical order, with all duplicates removed.

PROCEDURE CALL	EXPLANATION
<code>sort(list)</code>	Sorts list in alphabetical order and returns the resulting list.
<code>combine(list1, list2)</code>	Create a new list consisting of the entries from <code>list1</code> and <code>list2</code> .
<code>removeDuplicates(list)</code>	If any two or more entries in list have the same value, the duplicate entries are removed so that all entries appear at most once. The resulting list is returned.

**Solution:**

```
PROCEDURE combineLists(list1, list2, list3)
{
  list12 ← combine(list1, list2)
  list123 ← combine(list12, list3)
  list123 ← removeDuplicates(list123)
  list123 ← sort(list123)
}
```



**Teacher Tips:**

The **using manipulatives** instructional strategies may be helpful when introducing or reviewing lists. With this strategy, students use objects to examine relationships in the information given. The manipulatives for this activity could be cans of food, sticky notes, or utilizing a shelf with different sections for the elements.

Having students use the AP CSP Exam Reference Sheet to write their code will help them to become more familiar with the code prior to the exam.



**Check for Understanding:**

Assign the Topic Questions for Topics 3.12 and 3.13 in AP Classroom.



# Reflect: Investigate and Learn

## Activity: Making Connections with Students' Lives

Provide opportunities for students to think about and record their individual and collective learning as they progress through the activities. Students should answer the following reflection question to prepare for Part 2: Action Plan: *How can what you are learning in your AP<sup>®</sup> Computer Science Principles class support solutions that improve food insecurity and hunger in your local and global community?*

**As they write, the following questions can help students shape their reflections:**

- ▶ What are the social impacts of food insecurity and hunger?
- ▶ As you investigated existing programs and technology solutions addressing food insecurity and hunger, what do you feel these programs do well, and what did you feel they could do better?
- ▶ Who should be responsible for improving food insecurity and hunger locally and globally?
- ▶ What role do you think you could play in addressing food insecurity and hunger locally and globally, using what you're learning in AP Computer Science Principles?
- ▶ Based on what you learned about food insecurity and hunger and the actions others are already taking, what are five areas of need that you could address?
- ▶ What attracts you to these areas?
- ▶ What are some actions that you could take to address this issue?
- ▶ What excites you about these actions and the impact you can have?
- ▶ How can what you are learning in your AP Computer Science Principles class support solutions that improve food insecurity and hunger?

## Activity: Summarizing the Investigation

As part of their service project, students should summarize their learning to educate their classmates on the issue they have identified and investigated related to the issue of food insecurity and hunger. Select an appropriate format for students to complete their summary. For example, students may make class presentations, design posters to hang in the classroom, write blog posts to share with the class, etc. Summaries may be supported by multimedia or print materials that synthesize and analyze the topic and issue on local and global levels.

**When summarizing their investigation, students should keep in mind the following:**

- ▶ What are the key takeaways from your investigation?
- ▶ How are the problems you investigated similar at local and global levels? How are they different?
- ▶ How are the solutions you investigated similar at local and global levels? How are they different?
- ▶ Why may your investigation be important to other AP<sup>®</sup> Computer Science Principles students?

# Part 2: Action Plan

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## The Action Plan section is divided into four parts:

- ▶ Connect Learning
- ▶ Form Teams
- ▶ Develop Action Plan
  - Goal Setting
  - Understanding Approaches to Taking Action
  - Determining Clarity and Relevance of Goals
  - Measuring Success
  - Setting S.M.A.R.T. Goals
  - Identifying Resources and Creating a Network
  - Developing a Timeline
- ▶ Reflect

## WE Service Framework



# Overview for Part 2: Action Plan

Students apply the knowledge they acquired through the Investigate and Learn lessons to develop a plan through which they will address one local and one global service action.

## Key Takeaways

- ▶ Completing a service action requires a set of skills, including working as a team and creating action plans.
- ▶ Action plans involve setting goals, identifying measurements of success, creating a timeline for each task, assigning specific responsibilities to each team member, and preparing to network with others to complete tasks.
- ▶ Three approaches to completing a service action are direct service, indirect service, and advocacy.

## This Section Contains:

- ▶ Optional activities that you may choose to use with your class to deepen student understanding of particular elements of action planning.
- ▶ Templates that all students should complete to help them successfully meet the recognition criteria.

# Connect Learning

## Activity: Determining Interests

As a class, discuss the following:

- ▶ What issues related to your topic do you hear about on the news or read in newspapers and online articles? Why do you think these stories are covered by the media?
- ▶ What issues related to your topic do you think the general public is not aware of? Why do you think they are unaware?
- ▶ What issues related to your topic really bother you, even if you do not know a lot about them? Why are you bothered by these issues?
- ▶ If you were a world leader, what kinds of problems related to your topic would you tackle?



### Teacher Tip:

Support students in determining their personal interests by incorporating an activity in which they think back to the problems and solutions they identified in Part 1: Investigate and Learn. Have students brainstorm the global and local issues they feel are most important and personally interesting to them.

# Form Teams

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It is recommended that students work in teams of four to six to plan and carry out their AP with WE Service projects. However, students may work individually or in any size group as approved by their teacher. Each team will decide on one local and one global action, and then create a plan that details how the actions will be achieved. Since each team will focus on a particular action, encourage students to form teams based on their interest in working on similar local and global issues. The more inspired and passionate students are about the issue they identify around the topic of access to clean water, the more creative they will be with the actions they develop. In order for students to pick teams, have students present the local and global issues they are interested in, then join forces with other students who are addressing similar issues.



## Teacher Tips:

- ▶ When students first meet with their team, encourage them to create a contract so all members have a clear understanding of their own role and responsibilities, as well as those of the other members of the team. This will help to identify and establish group norms, including a plan and process for conflict resolution.
- ▶ Create a spreadsheet that the teacher can fill in with group members, including module (of choice), columns for check-ins, numbers, and agencies worked with. Teacher can also add a column to grade as each piece is completed.
- ▶ Instead of emphasizing skills and talents, ensure students are grouped based on the issue that is most important to them.
- ▶ If a big group forms around one issue, have students break into two groups and ensure they design different action plans on the same topic.

## Resources to Support Forming and Working in Teams

Resources are available in the AP with WE Service Program Guide:

<https://apcentral.collegeboard.org/pdf/program-guide.pdf>.

RESOURCE AND DESCRIPTION	HOW TO USE THIS RESOURCE
<p><b>Gift + Issue = Change</b> This activity helps students discover how they can use their talents and interests to carry out a service action.</p>	Use this activity to help students think about how they might individually contribute to an action that they feel passionate about.
<p><b>Finding Passion with the Issue Compass</b> This activity helps students to brainstorm a list of local and global issues and to share their thoughts, opinions, and analyses about the topics. Students then choose one issue about which they are most excited to learn more and take action.</p>	This interactive activity can be used to align students into action teams according to their interests and talents.
<p><b>Exploring the Four Leadership Styles</b> Every student can be a leader within their action team. This activity helps students to understand and value different kinds of leadership styles, and to discover their own strengths and challenges as a leader.</p>	Use this activity to help students better understand their individual strengths and the strengths of their teammates. By giving each person the power to be a leader, no one person will feel the burden of being responsible for the entire project.

## Resources to Support Collaborating as a Team

Resources are available in the AP with WE Service Program Guide:

<https://apcentral.collegeboard.org/pdf/program-guide.pdf>.

RESOURCE AND DESCRIPTION	HOW TO USE THIS RESOURCE
<p><b>Creating a Safe Space</b> It is important for each team to create a space in which everyone feels comfortable voicing their opinions. This activity asks team members to think individually and then as a group about what they will need in order to thrive within their team.</p>	Use this activity to help teams create guidelines around the way they interact and make decisions as a team.
<p><b>Drafting a Team Contract</b> This activity walks students through how to create a contract so all members have a clear understanding of their own role and responsibilities, as well as those of the other members of the team.</p>	Use the contract to help students identify and establish group norms, including a plan and process for conflict resolution. This is both a key skill that students will learn and a proactive approach to problem-solving within a team environment. Use the results from the Exploring the Four Leadership Styles activity to help determine roles and responsibilities of each student in the group.
<p><b>Establishing Roles and Responsibilities</b> Teamwork is a success when project tasks are divided equally and based on individual strengths.</p>	Use this activity to share with students how they can divide and conquer major areas of responsibility, and the roles they can each assume to make their service project both personally fulfilling and an overall success.

# Develop Action Plan

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After students have formed their teams, the next step is for teams to build out an action plan that:

- ▶ Identifies team goal(s)
- ▶ Establishes their metrics of success
- ▶ Identifies their network and required resources
- ▶ Creates a timeline for completing their actions by sequencing necessary tasks and identifying individual roles and responsibilities



## Teacher Tip:

Be sure teams create goals that are specific and measurable. In addition to meeting the Recognition Rubric requirements, this will allow students to report on the impact of their project in Part 4: Report and Celebrate.

## Activity: Goal Setting

Each team must create a goal for the team’s action. This goal will need to:

- ▶ Be clear, measurable, and informed by the team member’s needs assessment
- ▶ Incorporate one global and one local action
- ▶ Achieve direct service, indirect service, or advocacy.

Help students generate and decide on a team action goal using the following activities

## Activity: Understanding Approaches to Taking Action

Every great plan begins with establishing clear goals. But first, help students understand the types of actions their team might take through their action project. There are three approaches, generally speaking, to taking action:

- ▶ **Direct service:** Personally engaging with and providing hands-on services to those in need (usually in conjunction with an organization).
- ▶ **Indirect service:** Channeling resources to the needs of a community—locally, nationally, or internationally.
- ▶ **Advocacy:** Educating others about an issue to increase visibility and follow up with an action that focuses on enacting change.

### Resources and Ideas to Support Selecting a Type of Service

Resources are available in the AP with WE Service Program Guide:

<https://apcentral.collegeboard.org/pdf/program-guide.pdf>.

RESOURCE AND DESCRIPTION	HOW TO USE THIS RESOURCE
<p><b>Tips on Developing Direct Service Action Ideas</b> Get ideas and resources on how to personally engage with and provide hands-on services to those in need (usually in conjunction with an organization).</p>	<p>Use the following resources to show students how to create their own ideas or connect with existing ones that they can expand on:</p> <ul style="list-style-type: none"> <li>• Tips on Developing Direct Service Action Ideas</li> <li>• WE Volunteer Now Campaign</li> </ul>
<p><b>Tips on Developing Indirect Service Action Ideas</b> Get ideas and support on how to channel resources to the needs of a community—locally, nationally, or internationally.</p>	<p>Use the following resources to show students how to create their own ideas or connect with existing ones that they can expand on:</p> <ul style="list-style-type: none"> <li>• Tips on Developing Indirect Service Action Ideas</li> <li>• WE Go Green campaign</li> <li>• WE Scare Hunger campaign</li> <li>• WE Are Rafikis campaign</li> <li>• WE Create Change campaign</li> </ul>
<p><b>Tips on Developing Advocacy Action Ideas</b> Get ideas and resources on how to educate others about an issue to increase visibility and how to follow up with an action that focuses on enacting change.</p>	<p>Use the following resources to show students how to create their own ideas or connect with existing ones that they can expand on:</p> <ul style="list-style-type: none"> <li>• Tips on Developing Advocacy Action Ideas</li> <li>• Developing a Deep Understanding of Your Issue, and Messaging Your Message</li> <li>• Ensuring Message Credibility</li> <li>• Spreading the Word (Communications Strategies and Communications Plan Worksheets and Templates)</li> <li>• Practice, Practice, Practice</li> <li>• WE Are Silent campaign</li> </ul>



# Approaches to Taking Action Information Sheet

(1 of 1)

DIRECT SERVICE		
<b>WHAT IS IT?</b>	Personally engaging with and providing hands-on service to those in need (usually in conjunction with an organization).	
<b>EXAMPLE GOAL</b>	By the end of the semester, we will support a local food bank and shelter by packing and serving food to people in the community. We will also visit our neighboring elementary school and teach a lesson on food insecurity in our community.	
<b>ACTIONS</b>	<ul style="list-style-type: none"> <li>Reach out to local shelters and food banks to arrange a day for the class to visit and provide hands-on support</li> <li>Once a date has been decided, make sure students all have permission to travel to the food bank (if during school hours)</li> </ul>	<ul style="list-style-type: none"> <li>Connect with teachers/administration at local elementary school and arrange to visit a classroom to teach a lesson to young students on food insecurity</li> <li>Create and print worksheets to use with younger students</li> </ul>
INDIRECT SERVICE		
<b>WHAT IS IT?</b>	Channeling resources to the needs of a community—locally, nationally, or internationally.	
<b>EXAMPLE GOAL</b>	By the end of the year, we will create a storage and donation system for local families in need, where they can access furniture and other household items. We will develop a system for donations, pick-ups, and inventory.	
<b>ACTIONS</b>	<ul style="list-style-type: none"> <li>Conduct research into which items are most needed by community members (e.g., bed frames, dining tables, household goods, etc.)</li> <li>Reach out to local businesses to try to get a storage space donated</li> <li>Connect with school social workers/administration to gain their support</li> <li>Put up flyers around school and in the community, asking for donations (list specific items needed), including instructions on how/where to donate</li> </ul>	<ul style="list-style-type: none"> <li>Develop an online database for tracking donations and pick-ups, and maintaining inventory</li> <li>Share pick-up information with local shelters, churches, community centers, etc.</li> <li>Share the donation system with school social workers, so that they can maintain the project in future years</li> </ul>
ADVOCACY		
<b>WHAT IS IT?</b>	Educating others about an issue to increase visibility and following up with an action that focuses on enacting change. Actions around advocacy often look like raising awareness, but without a strong call to action within the initiative as a whole. Educating others is not considered service in and of itself.	
<b>EXAMPLE GOAL</b>	Through an informative art piece, we will educate our school community about the waste created by single-use plastic water bottles, and the impact they have on the environment. Then, we will sell reusable water bottles at school, and the proceeds from the sale will go toward clean water projects in developing countries.	
<b>ACTIONS</b>	<ul style="list-style-type: none"> <li>Research the impact of single-use plastic water bottles around the school and in the local community</li> <li>Plan out and create a 3D sculpture that incorporates informative text on the issue of single-use plastics</li> <li>Seek permission from school administration to display the piece in a common area of the school</li> </ul>	<ul style="list-style-type: none"> <li>Design and order water bottles to sell at school</li> <li>Research and select an international organization that focuses on clean water projects</li> <li>Organize a selling schedule for the water bottles, donate profits</li> </ul>



## Activity: Determining Clarity and Relevance of Goals

In their teams, students should now begin to develop their goal(s) for their action plan. Setting effective goals is a more difficult skill than most people imagine, but once students learn to employ one or more techniques for developing clear goals, it will serve them in all endeavors. Have students split up into their action teams and instruct them to brainstorm actions they would like to take, sharing from their personal reflections from the previous section, and drawing from their previous investigation and research, along with the needs assessment and reflections. Encourage students to use the 5Ws (what, where, when, why, who, and how) to express their overarching goal(s) and to be as clear and specific as they can.

As they write drafts of their goal(s), they should ask themselves the following questions to assess the clarity and effectiveness of their goal:

- ▶ Is this goal specific enough so that we know exactly what our team will accomplish?
- ▶ Can we measure whether or not this goal was fully accomplished?
- ▶ Is it achievable within our project period?
- ▶ Is it relevant to the social issue we are aiming to address?
- ▶ Do we know the deadline by which it will be accomplished?

## Activity: Measuring Success

As part of goal setting, establishing Measurements for Success is an important way of knowing if the goal has been achieved. Take time to discuss measurement in a bit more detail. Measurement is an aspect of the goal-setting exercise that students should understand before they begin executing an action plan. Students will need to understand how they will measure positive outcomes so that they understand what success looks like and how they will know they have achieved their goal. Is it based on the number of people they have reached through their actions? This will require teams to keep track of numbers. Or are they also looking at how the individuals reached have been affected? A survey with written answers (or multiple choice options) could do the trick. Share with students that measuring success can take two forms:

- ▶ Qualitative data is usually descriptive data that provides insights into what/how people think or feel. Qualitative data is harder to analyze than quantitative data.
- ▶ Quantitative data usually provides a numbers-based measurement (with associated units) such as quantity, amount, or range.



### Teacher Tip:

Have teams define quantitative and qualitative data sets for their action plan; then brainstorm a list of each that applies to their action project. Remind students that establishing their criteria for success and the corresponding metrics is an ongoing process. As they dive deeper into their action planning and execution, it will become clearer for students what kind of data they will need and how they will obtain it. The information may be collected by multiple team members. However, it is good to designate at least one person to any (and each) of the methods on their list.

## Activity: Setting S.M.A.R.T. Goals

A S.M.A.R.T. goal is Specific, Measurable, Attainable, Relevant, and Time-bound.

Before your group starts their campaigns or actions, you're going to need a good plan. By having a plan, you will have the means to establish a defined goal and a reliable way to reach that goal. Brainstorming ideas will allow you to determine clarity and relevance for your service project. Your criteria will serve as a guideline to ensure that you have a way to evaluate your outcome and see whether or not you've achieved what you set out to do. So whether your group is trying to hit a particular fundraising total, organize a huge event with a certain number of attendees, or reach a target audience with awareness-raising speeches, you'll want to start with a goal and a plan. The surest way to do this? Build a S.M.A.R.T. goal.

### Resources on Goal Setting

Resources are available in the AP with WE Service Program Guide:

<https://apcentral.collegeboard.org/pdf/program-guide.pdf>.

RESOURCE AND DESCRIPTION	HOW TO USE THIS RESOURCE
<b>Determining Clarity and Relevance of Goals</b> This is a brainstorming activity that guides students through big picture ideas and critical thinking as they begin to plan their service project goal.	Use this activity to help students sort through all the ideas they will come up with before they decide on the goal around which they will develop their action plan.
<b>Establishing S.M.A.R.T. Goals</b> This activity guides students through key steps of S.M.A.R.T. (Specific, Measurable, Attainable, Relevant, Time-bound) goals.	S.M.A.R.T. goals help students ensure that their team sets a "right-sized" and relevant goal to guide their action planning throughout this experience. This skill set, once learned, is one that students can apply to a myriad of other challenges and settings.

### Resources and Ideas to Support Measurements of Success

Resources are available in the AP with WE Service Program Guide:

<https://apcentral.collegeboard.org/pdf/program-guide.pdf>.

RESOURCE AND DESCRIPTION	HOW TO USE THIS RESOURCE
<b>Creating Measurements of Success</b> Reporting success comes down to students' ability to collect the right data and information. This activity helps students think about the outcomes of their project as part of their goal-setting and action-planning work.	Help students understand the difference between qualitative and quantitative data, and how to go about creating and establishing the right measures of success for each team's project.
<b>Collecting Evidence and Artifacts</b> This activity supports students with gathering the information they will need to help report on the outcomes of their service projects.	Use this resource to help students determine the type of data they need to collect, and then how they can go about gathering the info they need. The data and information students gather will feed into their team executive summary at the end of the overall module.
<b>Creating Surveys and Feedback Forms</b> Creating a survey and/or a feedback form means identifying the criteria on which you want to collect data and report the outcomes.	Use this resource to show students how they can create their own surveys and feedback forms by considering all the relevant data and information they will need. Sample surveys and forms will provide further guidance.

Excerpted from Determining Clarity and Relevance of Goals and Creating Measurements of Success: Copyright © 2018 WE. All rights reserved.

## Activity: Identifying Resources and Creating a Network

As students develop their goals and measures of success, they will start to identify what they need to execute their action plans. This will include creating connections with people, such as within (but not limited to) the school, your community, different organizations and businesses, topic experts and speakers, media outlets, the blogging/social media community, etc. These people will serve as supporters and amplifiers, as well as providers of information and resources.

**For this latter part, students will need to identify the resources they need to accomplish their goals. This can include (but is not limited to):**

- ▶ Facts and statistics (found through research or materials from other organizations)
- ▶ Tools and supplies (this list can be endless, but may include things like card stock, paint, tables, chairs, microphones, water buckets and sponges, labeled boxes to collect items, collection jars, etc.)
- ▶ Stories of individuals who benefit from the services of the organization
- ▶ Access to space and/or venues
- ▶ Methods and resources for producing necessary materials or media

## Activity: Developing a Timeline

A key to success in action planning is developing a careful timeline. Not only will it help students allot the appropriate time to each task and keep them on track, but breaking up a large task or action into smaller, more manageable tasks will help them address all the necessary details in a timely fashion.

### Resources to Support Identifying Resources and Creating a Timeline

Resources are available in the AP with WE Service Program Guide:

<https://apcentral.collegeboard.org/pdf/program-guide.pdf>.



#### Teacher Tip:

Emphasize to students that timelines are meant for them to have a date to work toward. When they begin working with organizations the timelines will need to be flexible.

RESOURCE AND DESCRIPTION	HOW TO USE THIS RESOURCE
<p><b>Creating a Timeline</b> Creating careful timelines is a key to success in action planning.</p>	<p>This activity will help students allot the appropriate time to each task and keep them on track. It will also help them break up a large task or action into smaller, more manageable tasks to effectively help them address all the necessary details in a timely fashion.</p>
<p><b>Identifying and Sequencing Tasks</b> Creating timelines means thinking through the details and plotting the relevant tasks that get students from point A to B and onward on a project.</p>	<p>This activity will help students think about each step of their action project and how to plot each step as an actionable task in a timeline.</p>
<p><b>Identifying Task Owners</b> This activity shows the difference between roles and responsibilities set out at the beginning of a project with that of an owner of an individual task.</p>	<p>Use this activity to show students how to effectively divide tasks amongst team members. Some tasks will be a part of each individual's overall role and responsibilities, and some will be based on personal interests, skills, and strengths.</p>
<p><b>Identifying Resources and Creating a Network</b> This activity highlights that through the process of planning and taking action, students will meet and be in touch with many people. This network of people will grow quickly and may be valuable beyond their projects.</p>	<p>Use this activity to help students create a networking map to help them keep track of the people they will be working with through their action plan. They can also document the resources they will need to access, either through their network or as an item they will need to source separately.</p>



## Activity: Creating the Action Plan

After working as a team to identify team goals, establish metrics of success, determine their network and required resources, create a timeline for completing their actions, and identify individual roles and responsibilities, students are ready to put all their ideas in writing. By creating an action plan, all team members are committing to support their team in carrying out the proposed project(s).



### Teacher Tip:

Have students create the local action plan first, complete the hours, and then have them complete a separate plan for their global hours.

Please keep in mind that there are no hours requirement that you need to meet, but this step will help students understand the time they invested in their projects.



- ▶ Have students use the Avoiding the Five Action Planning Pitfalls Tip Sheet, found in the Student Workbook, to review common mistakes made during action planning and to ensure these have been avoided.
- ▶ Have students use the Creating an Action Plan worksheet, found in the Student Workbook, to help build out their action plan.

# Reflect



After completing their action plan, students should individually reflect on their teamwork and action planning thus far. Teams should then share their plan, describe how the project addresses the issue at local and global levels, and make connections to the AP® course.

## Activity: Reflecting on Action Plan

Provide students with questions to help them reflect on their experiences working as a member of a team and creating an action plan.

- ▶ What is the issue that your team is taking action on? Why is this issue important to you? Why is this issue important to your team?
- ▶ What action is your team planning to take? How does this action fulfill an opportunity identified in your needs assessment?
- ▶ What are you most passionate and excited about in your action plan?
- ▶ Why is goal setting so important, and how can you imagine using goal-setting techniques in your life, future action plans, or other activities? How does your action goal relate to your AP® course?
- ▶ What kinds of leadership qualities do you hope to develop as you continue to take action?
- ▶ Why is teamwork so essential to carrying out effective service projects to address local and global issues?
- ▶ Having planned to make a difference on local and global issues, what have you learned about your ability to create social change?



### Check for Understanding:

Through this reflection, students should highlight why the issue is important to them, how they can make a contribution, why certain aspects of action planning (such as goal setting) are important life and academic skills, what connections they have made to their AP® course, and what they have learned so far.



### Teacher Tips:

- ▶ As part of their AP® with WE Service project, students will need to track their work. Look ahead to Part 4 to review and share expectations with students so that they are keeping records, taking photos, collecting documents, and tracking data.
- ▶ Educating others about their local and global issue is a great way for students to share their learning. Invite teams to hold an educational event or campaign to raise awareness about the social issue they have studied, which hopefully will have the power to compel their class (or community) to action. Students should consider what format they would like to use, based on their action. It may be a public speech at their school or in their community, a newspaper article, a website, a social media campaign, a short story, an artistic display, etc. It is also a great way to share the ideas they have developed in their action plan and how they will take action on the issue. This is not the action in itself but rather the education on the issue and the action plan.

## Resources to Support Deeper Reflection and Educating Others

Resources are available in the AP with WE Service Program Guide:

<https://apcentral.collegeboard.org/pdf/program-guide.pdf>.

RESOURCE AND DESCRIPTION	HOW TO USE THIS RESOURCE
<b>Perfecting the Elevator Pitch</b> This activity helps students understand that what they say about their actions has the potential to do several things, including inform, appeal to emotions, persuade, and compel others to take action themselves.	Use this activity to help students create the proper “elevator pitch” for their project as they think about how to create a compelling message about what they have learned about their issue and what they will do about it.
<b>Developing a Deep Understanding of Your Issue and Massaging Your Message</b> This activity highlights how educating others about an issue means students must be knowledgeable about it.	Use this activity and case study to show students how to think critically about their issue as they learn to ask informed and thoughtful questions, and assess the gaps in their knowledge and the information they need to know.
<b>Ensuring Message Credibility</b> In order to gain support, every team’s message should be able to stand up to the critics they may face. This activity will help students ensure the credibility of their message.	Use this activity to have students run three checks on the credibility of their message: creating an annotated bibliography, fact checking their message, and presenting to the class for a peer-review and question period.
<b>Spreading the Word</b> A message is only powerful if it reaches the right people. This activity, along with accompanying worksheets and templates, guides in developing effective communications strategies and a communications plan.	Use this activity to have students brainstorm various communications methods and assess each one’s effectiveness. Then, they will develop a communications plan around their selected method to detail who their message is intended for, how the message will be communicated, and when it will be delivered.
<b>Practice, Practice, Practice</b> This activity highlights how public speaking is a powerful force that can break the silence and raise awareness of difficult issues.	Use this activity and case study to have students read, listen to, or watch some examples of famous speeches to identify how the speaker uses the three I’s—Influence, Involve, and Inspire—with their audience.



Use the Reflect: Action Plan worksheet in the Student Workbook to reflect on what you have learned.



# Part 3: Take Action

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The Take Action section is divided into two parts:

- ▶ Connect Learning
- ▶ Re-Inspire and Reflect

## WE Service Framework





# Overview for Part 3: Take Action

As students take action, they will be equipped with tools to navigate obstacles, mitigate conflicts, collect evidence, and record their actions, while also learning how to maintain their drive and inspiration.

## Key Takeaways

- ▶ Effective teamwork is strengthened through abilities to navigate obstacles and overcome conflicts.
- ▶ The impact of an action can be measured by the collection of evidence and recording actions.
- ▶ Re-inspiration is important when caught up in the details.

## This Section Contains:

- ▶ Templates that all students should complete to help them successfully meet the recognition criteria.
- ▶ Optional activities that you may choose to use with your class to deepen student understanding of particular elements of taking action, effective teamwork, and recording actions.

## Resources on Determining Effective Teamwork, Navigating Obstacles, and Overcoming Conflicts

In Part 3: Take Action, you will use these resources to help students with practicing positive teamwork, navigating obstacles, and planning for contingencies as they begin to take action.

Resources are available in the AP with WE Service Program Guide:

<https://apcentral.collegeboard.org/pdf/program-guide.pdf>.

RESOURCE AND DESCRIPTION	HOW TO USE THIS RESOURCE
<p><b>Ezra Frech’s Story</b> Ezra Frech loves to play guitar and a ton of sports. Born with one finger on his left hand and a lower leg that was curved, he had surgery at age two to remove the lower part of his leg and transplant the big toe onto his left hand.</p>	<p>Ezra’s story (available at <a href="https://www.youtube.com/watch?v=KUqmJzoQQYQ">https://www.youtube.com/watch?v=KUqmJzoQQYQ</a>) highlights perseverance and tenacity. On losing his leg and gaining a transplanted thumb, he says, “And this hasn’t slowed me down at all!” He is his school’s starting quarterback and can shoot hoops for days.</p>
<p><b>Practicing Positive Teamwork and Conflict Mediation</b> Maintaining a positive and enthusiastic team can be difficult in the midst of long sessions of work and preparation. Conflicts are likely to arise, and understanding techniques for conflict resolution is an important lifelong skill to have.</p>	<p>Use this tip sheet and worksheet to help students understand conflict-mediation techniques and the power of constructive feedback to keep team dynamics positive and ensure their teammates feel supported and appreciated.</p>
<p><b>Navigating Obstacles</b> No matter how much work and preparation goes into an event, obstacles may arise at any point, acting as a roadblock to success.</p>	<p>Help students gain a better understanding of how others have successfully navigated and overcome obstacles using this case study on Spencer West, a motivational speaker and author of <i>Standing Tall: My Journey</i>, which underscores teamwork and focus on goals.</p>
<p><b>Planning for Contingencies</b> This means students are thinking ahead by looking at possible issues that might come up, and planning for possible solutions accordingly.</p>	<p>This activity helps students work through the process of proactively identifying potential issues and considering practical solutions so that they can plan ahead.</p>

# Connect Learning

## Activity: Student Log Sheet

In addition to the information, artifacts, analyses, and reflection pieces that you collect and complete, you will need to keep track of time spent on your action projects, reflect on your experiences, and collect the appropriate verification where needed. As you reflect, some of the things you may think about include:

- ▶ What did you accomplish today?
- ▶ What (if any) were the major successes or big wins?
- ▶ How can you build on these successes?
- ▶ What (if any) were the setbacks, minor or major?
- ▶ What is your plan to mitigate or resolve these issues?
- ▶ What do you plan to accomplish tomorrow/next class/next meeting?
- ▶ How are you feeling about the progress of the action so far?
- ▶ Did you collect the qualitative data you set out in your action plan? What are the testimonials telling you so far (if applicable)? Are there any tweaks or changes you need to make with your action plan?
- ▶ Did you collect the quantitative data you set out in your action plan? What are the numbers telling you so far (if applicable)? Are there any tweaks or changes you need to make with your action plan?
- ▶ What is still missing and how will you get the information you need?
- ▶ How did your team pull together? What were your teamwork successes? What conflicts or obstacles did you resolve or overcome? How can you be stronger as a team?



Have students use the Student Log Sheet, found in the Student Workbook, to help record and keep track of their activities and reflections.

# Re-Inspire and Reflect



In the process of carrying out an action, team members will often lose inspiration or momentum. Help students reconnect with their original motivation for taking action to empower them as change-makers.

Individually, ask students to reflect on their own story as someone who is interested in changing the world through action. Provide them with the following questions to reflect on their story as an agent of change.

## Activity: Reflecting on Take Action

Provide students with questions to help them reflect on their experiences of taking action as a team.

- ▶ How will you continue the work that you and your team started with this project?
- ▶ Changing the world is hard work, and a lot of fun too! What are the top three lessons you have learned during your service project?
- ▶ What is your story as an agent of change?

## Resources on Re-Inspiration

Resources are available in the AP with WE Service Program Guide:

<https://apcentral.collegeboard.org/pdf/program-guide.pdf>.

RESOURCE AND DESCRIPTION	HOW TO USE THIS RESOURCE
<p><b>Craig Kielburger's Story</b> When Craig first learned about child labor at the age of 12, there was no way for him to get involved and make real change as a kid. So he set out on his own to free children from poverty and exploitation, but freed his peers at home from the idea that they had to wait to change the world.</p>	<p>Use the various resources—including videos, articles, and books Craig has written—to inspire students with the knowledge that passion and determination can truly change the world. Access the resources here: <a href="https://www.we.org/en-CA/about-we/about-us">https://www.we.org/en-CA/about-we/about-us</a>.</p>
<p><b>Ally Del Monte's Story</b> Every year, 3.2 million kids are bullied. Sixteen year-old Ally Del Monte was one of them, but she decided to fight back by motivating others to be proud, be strong, and, most of all, be brave.</p>	<p>Use Ally's story (available at <a href="https://www.youtube.com/watch?v=QhHLekYrrp8">https://www.youtube.com/watch?v=QhHLekYrrp8</a>) to inspire students and spark a conversation. Ally talks about bullying and its terrifying impact, but she also talks about overcoming the bullying and leading by example.</p>
<p><b>Razia Hutchins and Maurice Young's Story</b> The I Am For Peace movement started as a neighborhood march against violence in the south side of Chicago. Now an annual event, it has gone global, thanks to champion youth Razia Hutchins and her partner in peace, Maurice Young.</p>	<p>Use Razia and Maurice's story (available at <a href="https://www.therenewalproject.com/fighting-against-chicagos-gun-violence-with-peace/">https://www.therenewalproject.com/fighting-against-chicagos-gun-violence-with-peace/</a>) to inspire students about how a passion-driven initiative can make a life-altering impact—on those who lead the initiative as well as those who will be inspired to join.</p>

# Part 4: Report & Celebrate

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**The Report and Celebrate section is divided into three parts:**

- ▶ Connect Learning
- ▶ Celebrate
- ▶ Complete Final Summary and Reflection

## **WE Service Framework**



# Overview for Part 4: Report and Celebrate

Students will compile and showcase their work. They will then celebrate their accomplishments and look ahead at ways to continue to sustain their actions.

## Key Takeaways

- ▶ Devoting time to serving the greater community can positively affect the individual and the community.
- ▶ Service learning enables students to make local and global connections to AP® course content.

### This Section Contains:

- ▶ Templates that all students should complete to help them successfully meet the recognition criteria.
- ▶ Tables containing optional activities that you may choose to use with your class to deepen student understanding of particular elements of Report and Celebrate.



# Connect Learning

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## Activity: Understanding the Purpose of Showcasing Work

### Discuss the following:

- ▶ Why is it important to put together evidence of your service project?
- ▶ What is the value of showcasing your work?
- ▶ What are the different ways in which portfolios can be presented?  
Are some ways more effective than others? How and why?
- ▶ How can a portfolio be used to educate, inform, and guide other students in creating their portfolios?

## Activity: Collect Artifacts



To showcase their work, instruct students to consider including elements they would find interesting and helpful to have if they were just beginning their action. What would they include to help students who are only beginning their action planning?

## Putting Together a Portfolio of Artifacts

A portfolio is a collection of work, material, and achievements that you believe best explain and represent your AP<sup>®</sup> with WE Service work. It can take one or more forms:

- ▶ An online presentation through Prezi or PowerPoint
- ▶ A blog or a website, or any other online tool that you may choose
- ▶ Video presentation
- ▶ Physical portfolio displayed on a presentation board, in a binder or scrapbook, etc.



### Focus Area Alert:

Have students describe the steps and actions they took to effect change. They should describe any policies, regulations, or laws that could be implemented and enforced to facilitate continued change in this area.

# Celebrate



## Optional Activity

Amazing actions, incredible impacts, and outstanding student leadership deserve to be celebrated. It is important to honor the work students have done and recognize the impact they have had on their communities, the nation, and the world. As a class (or perhaps a school, if other AP® with WE Service courses exist in the school), organize a celebration that fits the actions that the students have taken. A few celebration ideas include:

- ▶ WE Day
- ▶ A school-wide assembly
- ▶ A project fair for the whole school to visit
- ▶ An outdoor cinema-style documentary screening
- ▶ Poster exhibition
- ▶ School newsletter, newspaper, or special-edition magazine

Do not forget to share and celebrate over social media:

Post on [facebook.com/WEmovement](https://www.facebook.com/WEmovement) • Tweet [@WEmovement](https://twitter.com/WEmovement), [#WEday](https://twitter.com/WEday), [#APWEServe](https://twitter.com/APWEServe)



### Teacher Tip:

Students have seen what they can accomplish as small groups, so put together all of their numbers so they can see the change they affected as a whole group.

## Resources on Celebrating...

Resources are available in the AP with WE Service Program Guide: <https://apcentral.collegeboard.org/pdf/program-guide.pdf>.

RESOURCE AND DESCRIPTION	HOW TO USE THIS RESOURCE
... At WE Day	WE Day is a powerful, life-changing event that combines the energy of a live concert with the inspiration of extraordinary stories of leadership and change. Visit the WE Day website ( <a href="https://www.weday.org/en-CA/our-work/we-day/">WE.org/en-CA/our-work/we-day/</a> ) to find an event in your city or nearby, and apply for tickets.
... At a School-Wide Assembly	School assemblies are a popular way to showcase and celebrate collective achievements. Use the sample road map in this tip sheet to organize a memorable school assembly.
... Through Social Media	Social media is a great way to celebrate all of the amazing work your class is doing. Join the conversation online and create fun, engaging content to share your big ideas.
... Through a Project Fair	A project fair allows for intimate and meaningful interaction between teams and the rest of the student body, allowing other students to explore and understand the different service actions at their own pace. This tip sheet will provide thoughts and ideas on organizing a project fair.
... With a Documentary Screening	Why not make a final documentary of the different action projects and hold a school-wide screening? This tip sheet will help you get started.
... With a Poster Exhibition	Posters can convey a lot of information and emotion through art and concise copy. It is a great team exercise as part of their portfolios and a terrific way to share and celebrate their successes within the school and even the community.
... With a Special Publication	Put together a class publication that shares the highlights, learning, and successes of the teams through individual and/or team articles, photo essays, and editorials. This tip sheet will get you started.

## Celebrate with WE Day

Imagine a stadium-sized celebration of thousands of students who share a passion for making the world a better place. Imagine a global roster of speakers and performers including Nobel Prize-winner Malala Yousafzai, Martin Luther King III, Demi Lovato, and Selena Gomez. Imagine an event where young service leaders are the VIPs! That's WE Day.

### WE Day Connect

WE Day Connect is an interactive, online event, hosted by WE Day talent, for students and educators across North America. In this 90-minute program, students celebrate selfless acts of volunteerism and learn how their peers are working to make a difference in their local and global communities. During our first WE Day Connect event, 30,000 people tuned in, making this our largest youth attendance for a WE Day to date! Learn more at [WE.org/en-CA/our-work/we-day/we-day-connect](https://www.weday.org/en-CA/our-work/we-day/we-day-connect)

### WE Day Special

We've teamed up with some amazing partners to bring the power of WE to you—wherever you live. The WE Day broadcast will bring families together for an evening of inspiration and empowerment through incredible speeches and performances by people who are making a difference in their communities. Watch the WE Day special online at [WE.org/broadcast](https://www.weday.org/broadcast).

### WE DayX

Bring the power of WE Day to your school. Kick off your year of action or celebrate the end of one with your own WE Day-style assembly, and unite your school for a better world. With WE DayX, any group can host their own event in the true spirit of celebrating and inspiring local change-makers. Learn more at [WE.org/wedayx](https://www.weday.org/wedayx).



### WE Day Webcast

Can't make it to WE Day? Watch the live webcasts of each WE Day event online at [WE.org/watchweday](https://www.weday.org/watchweday). For a list of event days, check out [WE.org/we-day-events](https://www.weday.org/we-day-events).



### Earn Your Way

You can't buy a ticket to WE Day. As an AP® with WE Service class, you earn your way there through your service-projects and are invited to the WE Day closest to you! Visit [WE.org/weday](https://www.weday.org/weday) to learn more.



## Celebrate with Social Media

**Social media is a great tool to show all the amazing work your students are doing!** Join the online conversation and create fun, engaging content to share your big ideas. Whether you will be running your group's accounts or teaching your students how to run social media in a fun, safe, responsible, and effective way, these tips will provide creative ways to amplify your projects in the digital space!

**Getting connected.** This is the best place to get started. Make it a team effort and tell your school that you'll be posting all about the amazing work they'll be doing. Grow your network by adding group members and students on all of your social media accounts. Stay digitally active and keep up the conversation online! Engage with posts using likes and motivate each other with comments.

**Take great photos.** Eye-catching visuals are an absolute necessity when it comes to social media! Bright backgrounds, daylight, and big smiles are the best combination for an awesome picture. Mix it up by changing up settings. (One photo can be in a classroom; another can be outside!) This will add variety to your feed and make it much more interesting.

**Share in a timely fashion.** Want to know a fact about social media? It only thrives if people see it. Post at times that will guarantee views. Sharing during lunch break and right after school will ensure your content gets the most visibility.

**Updates!** Does your latest project include a goal you're trying to reach? Keep your school updated on how close you are! Provide updates as soon as you get them, to keep your students and teachers in the know. That post might be the extra push you need to achieve your goal.

**Use hashtags.** Craving inspiration to spice up your campaign? See what others are doing by looking up the hashtag.

**Gifs!** Take your feed to the next level with these short animations. Download a GIF maker from your preferred app store and fuse your photos together to liven up your newsfeed.

**Tag—you're it!** Here's a fun way to get your school involved: play a game of digital tag. Once you've posted, have students tag five friends and challenge those friends to tag and share with five others. You'd be surprised how fast word gets around! (PS: This works even better if you all use the same hashtags in your captions.)

**Create a challenge on the WE Day app!** Amplify your latest project with a challenge on the WE Day app! Not only will your friends be psyched to take it, it'll also be available for all app users so they can contribute to your project! Make it quick and related to your project, and amplify it further by sharing it on your social channels!

**Share with us.** We love seeing how your projects are going! Tag your posts with [#WEday](#), [#WESchools](#) and [#APWEServe](#). They might just get featured!

# Complete Final Summary and Reflection

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## Activity: Complete Final Executive Summary

Once students have completed their action, submitted their evidence, and celebrated their work, students may complete an executive summary as a team. The executive summaries offer a snapshot of the team's outcomes based on:

- ▶ Summary of the team's work and individual contributions
- ▶ Analysis and highlights of evidence collected
- ▶ Explanation of the project impact and its significance within a larger context
- ▶ Summary of what they learned about their AP<sup>®</sup> course through the service project

## Activity: Reflect on the Overall Service Experience

Individually, students complete a final reflection that describes their overall service experience. Students reflect on their thoughts at the start of the project and how they feel they have grown over the course of their service work. What do they now understand about the role of service and active citizenship, especially as an application of their learning?

## Activity: Record and Reflect

Using the following questions to guide your writing, reflect on the overall action project, which will inform the development and assembly of your portfolio.

Overall, in this action project:

- ▶ What were your most important successes as a team, and what were the important factors that helped you accomplish those successes?
- ▶ What obstacles did your team overcome and what strategies were important in navigating those challenges?
- ▶ What was your favorite moment in carrying out your action?
- ▶ What are you most proud of?
- ▶ If you could go back to the start, what advice would you give yourself or your team? Is there anything you would do differently?
- ▶ How is your community/the nation/the world a better place because of your action?
- ▶ How have you developed as a global citizen in taking action? What plans do you have to continue your work as a change-maker?



## Completed the module? Register to become a WE School!

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Congratulations on implementing and completing your service projects. Did you know that if students at your school complete at least one local and one global action, your school is eligible to become a WE School? Spread pride throughout your school and unlock unique opportunities by starting a WE Schools group! Check out [WE.org](https://www.we.org) and look for the WE Schools application.

## **AP Computer Science Principles Content Development**

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Trevor Packer, Senior Vice President, AP<sup>®</sup> & Instruction

Andrea Sluchan, Associate General Counsel

# Resources

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## Getting to Know the Topic

“Women hold the key to building a world free from hunger and poverty.” FAO,  
<http://www.fao.org/news/story/en/item/460267/icode/>

“Combining social protection with pro-poor investments can eradicate world hunger by 2030.” UN,  
<https://news.un.org/en/story/2015/07/503962-combining-social-protection-pro-poor-investments-can-eradicate-world-hunger#:~:text=According%20to%20a%20new%20joint,eradicate%20world%20hunger%20by%202030>

“Household Food Security in the United States 2018.” USDA,  
<https://www.ers.usda.gov/webdocs/publications/94849/err-270.pdf?v=963.1>

“How many working families are dependent on food banks in the US?” OXFAM,  
<https://politicsofpoverty.oxfamamerica.org/us-working-families-dependent-food-banks/>

“How We Fight Food Waste in the US.” Feeding America,  
<https://www.feedingamerica.org/our-work/our-approach/reduce-food-waste>

# Notes

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# Notes

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