# Lesson 9: Designing Apps for Good

## Overview

**Question of the Day: What is an App for Good we want to create?**

This lesson starts an app design project that lasts through the end of the unit. Students first explore a number of apps designed for social impact that have been created by other students. Students form project teams and lay out a contract for how the team will function throughout the development of their app. Finally, they brainstorm a team name, a topic for their app, and potential users.

## Purpose

This lesson lays the foundation for the project that will last the remainder of the unit. Students are introduced to apps where people their age have used technology to address issues they care about. The resources provided are a great starting place, but you can make this lesson pack a bigger punch if you find examples (even those from your own previous classes) that demonstrate local examples of students designing apps for social good. Students also complete a teamwork contract, which will anchor how they collaborate for the remainder of the unit.

## Assessment Opportunities

1. **Develop a plan for collaborating with others to design a computational artifact**

   Activity Guide, page 1: There should be a reasonable plan for managing disagreement under "Decision Making".

2. **Describe the target users for a computational artifact**

   As students share their user groups at the end of the main activity, the descriptions should include enough specificity and detail to later identity a common set of needs among the group members.

## Standards

Full Course Alignment

**CSTA K-12 Computer Science Standards (2017)**

- **IC** - Impacts of Computing

## Objectives

Students will be able to:

- Describe the target users for a computational artifact
- Develop a plan for collaborating with others to design a computational artifact

## Preparation

- Assign teams of 3-4, ideally based on similar interest in an app topic
- Print one copy per team of the activity guide
- Choose 1-3 of the apps from the example apps to share with the class
- Arrange classroom seating for pre-selected teams of 3-4 students
- Put out sticky notes for each team

## Links

**Heads Up!** Please make a copy of any documents you plan to share with students.

For the teachers

- **App Design Kickoff** - Exemplar
- **CSD Unit 4 - The Design Process** - Slides
- **Example Apps for Good**

For the students

- **App Design Kickoff** - Activity Guide

# Agenda

**Project Preparation**
- **Looking Ahead**

**Warm Up (5 minutes)**
- **Journal**

**Activity (35 minutes)**
- **Team Contract**
- **Brainstorming**

**Wrap Up (5 minutes)**
- **Journal**

# Teaching Guide

# Project Preparation

## Looking Ahead

This lesson sets up a larger project that students will work on for the remainder of this unt. Throughout the remaining lessons, students will:

- develop an app idea
- make a paper prototype
- make a digital prototype
- perform user testing
- create a presentation about their app.

To prepare for this, you may want to skim through the remaining lessons in this unit to see how this project builds across multiple lessons. You may also want to look at the resources in the **final lesson of this unit**, especially the **rubric** and **student checklist**, to see how each lesson builds on each other towards the final presentation.

# Warm Up (5 minutes)

## Journal

**Prompt:** What are other apps or pieces of technology that work do address a social issue or solve a problem for a community?

**Discuss:** Have students share their answers with a partner before sharing out as a full group. Keep a list of apps in the front of the room for the class to see.

Discussion Goal

**Goal:** This is a brainstorming prompt, where students are encouraged to come up with a wide variety of responses. They may think of apps or pieces of technology that address accessibility issues, such as captioning apps for the deaf and hard of hearing. They may also think of apps that connect groups of people together, such as apps that help distribute food from a food bank, or give medical updates from a doctor's office.

### *Remarks*

> I can tell many of you are already familiar with apps that address an issue or solve a problem. That's important because today we're going to start a project that will last for the remainder of this unit - we'll be working as a team to design an app that solves a problem in our community. To start, we're going to look at a few example apps developed by students just like you that also solve problems in society. Each of these apps used the same problem solving process that we've seen over the last few weeks.

**Question of the Day:** What is an App for Good we want to create?

## Activity (35 minutes)

**Display:** Have 2-3 example apps prepared to display to students. Several are provided in the slides, but you can also use apps from the Example Apps For Good resource or other student apps from your school or community. For each app:

**Discuss:** What do you think is the social issue that this app was designed to address? How does it accomplish this?

1-3 **Sample Apps for Good**

1 2 3

Teaching Tip

**Timing:** There's a lot happening in this lesson, so be mindful of timing when looking at these apps. You don't need to explore each app in-depth - a broad overview is fine for now. The goal is to present some initial sample apps to set student expectations before jumping into the main activity.

**Display:** Show the Problem Solving Process graphic to review the Define, Prepare, Try, and Reflect steps

### *Remarks*

> Each of these apps were created using the Problem Solving Process. We've practiced many of these steps in our previous lessons, but not always in the same order and sometimes with "shortcuts" to help develop the app faster. For this project, we will spend several days completing this entire process.

**Group:** Have students move into their teams that they will work with for the remainder of this project. For future lessons, students can start class sitting with their teams.

Teaching Tip

**Forming Teams:** The remainder of this unit has students completing a project in teams of 3-4. They will work together to choose a topic, develop an app, refine the app through testing and feedback, and present their work at the end of the unit. Consider how you would like to group together students to form teams, since this is a decision that will impact the rest of the unit. Also consider whether any of your class norms can be used in this unit to help reinforce teamwork & collaborative behavior.

**Distribute:** One copy per team of the activity guide.

Teaching Tip

**Reducing Printed Materials** This guide can be completed online or as a journal activity.

## App Design Kickoff

Let students know that they are currently seated with the team that they will be working with throughout this app design project.

## Team Contract

**Display:** Have students read through the top section of the activity guide. In order to support a positive and productive teamwork environment, each team will start by developing and signing an agreement. You can use this agreement throughout the course of the project to address and mediate issues among team members. Go through each section of the agreement with the whole class.

Teaching Tip

**Customizing Rules:** The rules in the team contract are general enough to work for most classrooms, but to make it more impactful you should consider customizing the contract to include wording from your classroom or school rules.

**Teamwork Videos:** Consider reminding your students of the Teamwork videos they watched in Unit 2 when building a website together - or, if you and your students didn't complete Unit 2, consider watching those videos at this point in the lesson.

- **How Teamwork Works**
- **Dealing with Disagreements**

**Communication:** The communication section covers basic respectful communication guidelines. There are two open spaces for groups to add rules of their own. Ask groups to consider the modes of communication that they'd like to use and what the expectations should be. For example, *we will use email to communicate outside of the classroom*

**Decision Making:** While other sections are just bullet-pointed lists, the decision-making section includes a space for students to think of ways to manage disagreement. Encourage them to find a plan that will seem fair to everyone, even those with a minority point of view. You may want to have a small class brainstorm and model rules that encourage respectful conversations before having students return to their groups and make their own rules.

Assessment Opportunity

This part of the guide may prompt a class discussion. Check that students are finding ways that respect everyone on the team. Although the simplest solution may be "majority wins", you may want to challenge the students with scenarios in which the majority is unfair to the minority, such as three members voting that the fourth must do most of the work. Although there is no one right way to handle disagreement, students' plans should find ways to incorporate every team member's perspectives.

**Participation:** The participation section is meant to prevent students from getting stuck in situations where they are unsure how to proceed. Consider adding rules to this section as a whole class.

**Signing the Contract:** Once you've confirmed that all students understand and agree to the terms of the contract, have team members sign their names at the bottom.

### *Remarks*

> Great job everyone! Now that we've all agreed on how we'll work as a team, it's time to start brainstorming our app! Turn to the next page of the activity guide and get ready to start thinking of a name for your team!

**Transition:** If space allows, give each team some space to work on the next activity where they can spread out.

**Distribute:** Pass out sticky notes to each group.

## Brainstorming

**Display:** Remind students of the brainstorming activity they did in the User-Centered Design Activity where they used post-it notes to generate as many users as they possibly could. We will be doing the same exercise for our team name, our topic, and our potential users. Remind them of some of the norms for this activity:

- One user per sticky note
- No bad answers
- Build on others' suggestions with "Yes, and..."
- Every idea is appreciated, no matter how wild!

**Team Name:** To warm-up and practice brainstorming, give teams a few minutes to come up with a team name and record it on the activity guide. Encourage students to complete this in three steps:

- Write down any team name ideas on a post-it and place it in the center of your group
- As a team, categorize and group post-its
- As a team, discuss the options you like the most and decide on a team name.

**Circulate:** Monitor students as they complete this process, making sure students are following the brainstorming process. They will repeat this process many times throughout the unit, and developing a team name is a low-stakes way to practice the process itself.

**Topic:** Give teams roughly five minutes to choose a general topic for their app. It's important to remind them that they aren't trying to come up with what the app will do or any specifics at this point, but just agreeing on a general topic that it should address. They should use the same brainstorming process as above - ideas on stickies, grouping & categorizing ideas, then discussing and coming to a decision.

**Circulate:** Monitor students as they complete this process, focusing on whether or not students are sticking to communication, participation, and decision-making norms they decided earlier in the lesson. As you interact with groups, it may be helpful to model inclusive sentence starters that teams can use when brainstorming.

**User Groups:** Give students some time to generate ideas for different users who might use their app. They will have 5 minutes to generate their post-its and group them, but they don't need to make a decision about specific users yet. Once teams have groups of possible users for their topic, they should discuss one or two potential categories they would like to focus on. They will have time during the next two lessons to further research and refine their target user group, but they want to have a clear starting point to guide that research.

**Circulate:** Monitor groups as they complete this process, focusing on their choice of user groups. Check that the groups are specific enough that students will be able to identify a set of needs common to the group's members. For example, "students" is probably too broad, since it could include a wide variety

of ages and goals. For these examples, encourage students to get more specific, such as narrowing in on students by age or location or mode of transportation.

**Share:** Ask each team to briefly share their name, topic, and a description of one of their target user groups.

**Collect:** Either collect the materials from each team or have students store their team contract in a safe place that can be accessed later.

Teaching Tip

**Managing Papers:** The Team Contract is the first of many activity guides and paper prototypes that students will use throughout this unit as they build their app. Consider creating a folder for each team where they can store all of their materials, or creating a designated project area for each team. This makes it easier to refer back to previous resources and helps students stay organized and manage their materials.

# Wrap Up (5 minutes)

## Journal

**Prompt:** Now that we've identified a topic and some potential users, what are some strategies for how we can learn more about our users before developing our app?

**Discuss:** Have students write in their journals first, then share with their team and then as a full class.

Discussion Goal

**Goal:** Hopefully students will recall steps we've taken in previous lessons, specifically talking to our users and interviewing them to better understand their needs and interests. Students may also come up with ideas centered around independent research, such as looking up information online or researching similar apps. If this comes up, tell students that this is exactly what we will be doing in the next lesson - performing research to better understand our users and any existing apps on our topic.