

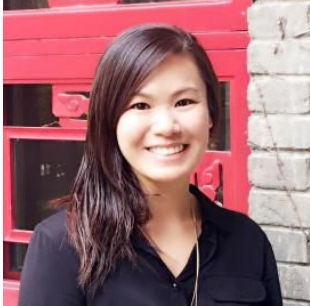
# Promoting Local Climate Action Through Youth Engagement in Schools



Project Report  
URBANST 164: Sustainable Cities  
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## **Acknowledgments**

We would have not been able to complete this project without the guidance and support of:



**Deland Chan**

Assistant Director of Urban Studies for Community Based Learning  
and the Human Cities Initiative at Stanford University



**Diane Bailey**

Executive Director of Menlo Spark



**Lisa Altieri**

Founder at Community Climate Solutions and Climate Solutions Net

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## Our Team

Our team came from diverse academic backgrounds and grade levels. Our different areas of expertise melded together well to form a cohesive partnership. We are:



Tate: 2020 International Relations



Sarah: 2021 Undeclared



Armando: 2018 Mechanical Engineering



Davianna: 2018 Earth Systems

## **Project Purpose**

### **Background information about the project**

Our project has been a continuation on work being done by the organization, Menlo Spark. MenloSpark began when a small, diverse group of community members joined together to promote long-term economic vitality, equity, and quality of life in Menlo Park while addressing the urgent threat of climate change. MenloSpark is a nonprofit initiative that collaborates with the city government, businesses, and residents to become a climate-neutral, or zero carbon city by 2025 - therefore, the Green Challenge was created as a pathway to a sustainable lifestyle.

Our project focused on the Green Challenge, an online resource that encourages families, individuals, and students to practice a green lifestyle. The Green Challenge awards points to certain climate actions and provides potential actions based on difficulty for users to complete. Users can create teams with each other and compete with other teams as well. In our specific project, we were mostly concerned with youth engagement and how the Green Challenge has been and can be used in schools, middle and high schools in particular. We focused our efforts evaluating how the Green Challenge has gone in schools in the past and how it can be improved. Additionally, our project looked at how these findings can apply to other parts of Menlo Spark, including publicity and engagement of other parts of the Menlo Park community in the Green Challenge and climate action.

### **Project Location**

Understanding the community is crucial to tailoring our efforts to create the best outcome. To get more context on the community, we looked up the history of our worksite, Menlo Park, as well as the demographics of the city. The 19 square mile Menlo Park, first incorporated in 1874, is located just 2.4 miles Northwest from us here at Stanford. Menlo Park is home to just over 32,000 residents. We will be working with our community partner, Diane, who has no formal office space, as well as with local schools La Entrada Middle School and Menlo Atherton High School. One of our next steps will be getting demographics for the schools themselves, to better assess the needs of the students we are targeting. The demographics of the city at large are as follows:

In terms of gender, there is a pretty even split between males and females. With age, the largest group is 25-44, who make up 31.5% of the population, followed by ages 45-64 with 26.1% and rounding out the top 3 is 0-17 year olds, who comprise 23% of the population. The median age is 38.9 and over 60% of population is aged 44 and younger, which is on par with the national average. User friendliness is important for the 40% of the population over the age of 44, and social media presence is increasingly important to engage younger generations. The racial makeup of Menlo Park is majority white (70%), with the second largest racial group being asians, who comprise almost 10 percent of the population at 9.90%. Hispanics of all races, a separate category on the census, comprise about 18% of the population. Menlo Park has less black people (5% compared to about 13% nationally) and more asian people (9% compared to about 5% nationally) than the national average, at least in terms of the 2010 census data.

With income, the largest group is the highest earners, with almost a third of residents making \$200,000+ a year. However the second largest group, which comprises almost 20% of

residents, is the lowest earners, who make less than \$50,000/yr. The median income between 2008 and 2012 was \$113,774, compared to the national average which is currently close to \$59,000. So Menlo Park is wealthier on average than the rest of the country, however the housing prices are also much greater. The median home value in Menlo Park in 2015 was \$1.37 million compared to a national average of \$178,000. In the particular schools that we're looking at, the youth tend to be of lower income. For our project, it was also important to recognize that youth have less financial means than parents, which can reduce the power students typically have to complete climate actions autonomously. These demographics all matter when trying to transition Menlo Park into a more sustainable lifestyle. With a broad range of incomes, it was important to keep in mind a variety of different price and time commitments to the actions. Some members of the community will be more motivated by prizes, while others will be more motivated by money savings. We completed our project with all of these considerations in mind.

### **Description of community partner and organization's mission**

Menlo Spark is a nonprofit dedicated to promoting long-term economic vitality and improved quality of life for the Menlo Park community through the lens of climate change awareness. By promoting awareness of clean power and conservation in housing, smarter transportation choices and sustainable living habits, Menlo Spark hopes to create an easy pathway for residents to live sustainability. In 2013, Menlo Spark pledged to reduce its GHG emissions by 27% by 2020; by 2025 Menlo Park hopes to be a climate-neutral, or zero carbon city. In order to encourage residents to take actions, the Green Challenge was created as an attainable roadmap to a sustainable lifestyle.

The Green Challenge has had limited success since its conception, with about 380 households currently participating and 500 climate actions taken. Although the challenge has successfully tailored some resource usage (i.e. water, gasoline), it will likely fall short in achieving other goals, such as the reduction of carbon in the city. Therefore, Menlo Spark wants to help the rest of the community to actively engage in sustainable behaviors and join the Green Challenge.

### **What did you set out to accomplish in this project?**

Our main research question was as follows: How can we engage the Menlo Park community in addressing climate change? During the course of this project, we were aiming to search for the main factors that would motivate the Menlo Spark community to take actions, especially youth and those who do not have as means to complete more financially intensive actions. Overall, we hoped to identify the residents' primary concerns regarding sustainability, as well as create effective incentives to sustain community, and specifically student involvement in this initiative.

We had three primary project deliverables comprised of multiple parts. First, we designed a student project package by reaching out to students in La Entrada Middle School and Menlo Atherton High School, two of Menlo Park's local schools. Since our ability to alter the current Green Challenge website is limited, our team worked to create worksheets and additional media to walk students through the website's features, provide shortcuts to identify low-commitment actions, and provide a set of guidelines on how to complete actions effectively.

Next, we worked to formulate a Campaign Strategy for Menlo Spark through a document discussing how to interact with schools and youth in an effective yet ethical fashion. This plan

will include a comprehensive social media strategy to improve engagement on Menlo Spark's Instagram and Facebook pages, such as the effective use of hashtags and timing of posts. Most significantly, we found ways to incorporate the Green Challenge into the California Core Curriculum in order to make the challenge more appealing to schools and encourage them to run the Green Challenge in their classrooms.

Finally, we planned to interview families, individuals, or students about their successes with the Green Challenge in order to update the current Household Success Story on the website. Although we find value in promoting a family with large success, such as installing solar panels, we also want to emphasize the accessibility of sustainability to all socioeconomic classes and highlight a family that completed a series of low-cost, highly feasible actions.

In order to address all of these goals, we divided our questions into three categories: user-friendliness, motivation, and longevity. User-friendliness is key, as it guides our analysis of whether the media we create will be of service to the students, or if there are actions on the Green Challenge website that are accessible to all audiences. In order to promote these actions, we had to also prioritize the motivations behind the Green Challenge, such as the incentives we plan to offer students and households to participate. To ensure the sustained impact of our plan, we placed an emphasis on longevity, which involves the sharing of success stories and the illustration of positive, long term impacts in the Menlo Park community.

### **Why is this project important? What's at stake? Policy/equity implications?**

Completing our deliverables shows that there are certainly several major policy, research, and advocacy implications. Devising a feasible strategy to engage the community in climate action has broader implications in terms of replicating a program like the Green Challenge elsewhere. Menlo Park could easily serve as an example for other communities to replicate their strategies since this project contributes to a larger effort to achieve net carbon neutrality in the near future. In addition, there are implications that include accessibility to sustainable living for folks with lesser means such as youth and lower-income folks. By showcasing how students can attain environmental sustainability without relying too much on their parents, we show that environmental sustainability can be a more accessible lifestyle regardless of financial means. Our hope is that the strategies being used here can be used in other areas as well.

We think that finding ways to incentivize and motivate people to engage teaches us a lot about successful networking and campaigning for a cause. We have learned about how to get to know a community that you are a part of and how to ethically communicate and interact with that community by creating a relationship with a community partner.

### **How does the project relate to the broader themes of sustainable cities?**

This project is important to sustainable cities because it touches on both environmental sustainability and social equity. It focuses on incentives and motivations to voluntarily participate in environmentally responsible living, but also aims to make this type of living more accessible to all demographics by providing guides to students and folks who would like to make an impact on the environment without doing traditional "big sustainability retrofits" etc. Sustainable cities require buy-in from the community and we hope that this project has showcased strategies to achieve that. We hope that the results of our project can be used to empower folks who typically do not have the agency or ability to participate in "going green".

# Literature Review

## **Sustainable Behavior**

Previous studies surrounding environmental engagement have concluded that it is difficult to maintain these sort of behavioral changes in the long term. *Fostering Sustainable Behavior* by Doug McKenzie-Mohr discusses three methods of campaigning: the attitude-behavior approach, the economic self-interest approach, and community-based social marketing. The attitude-behavior approach is the most common tactic used to advertise climate-related causes but falls short because information without an incentive does not trigger changes in behavior. Although taking economic-self interest into account is marginally more effective, barriers of inconvenience will prevent individuals from pursuing actions that will save them money.

Therefore, when considering our project methodology, we took elements from the community-based social marketing strategy, which consists of the following steps:

1. Selecting behaviors: Which behaviors are we trying to promote and encourage?
2. Identifying barriers and benefits: What barriers, whether physical, financial, internal, external etc, impede our selected audience from carrying out the selected behavior? How do we remove these barriers to enable the execution of behaviors?
3. Developing strategies: What tools will we use to appeal to the interests of our audience (i.e. personal contact)?
4. Piloting: Testing out the strategies on a smaller group in order to receive feedback and compare multiple strategy types.
5. Broad-scale implementation and evaluation: Continually re-evaluating the efficiency of the strategy and its ability to adhere to the original goals.

Regarding the Menlo Green Challenge, we roughly followed the framework above to focus our objectives. For example, we tried to specify what kind of climate change engagement we wanted to promote, or we researched the barriers to student participation in the Green Challenge, such as a lack of incentive or reward.

A survey conducted by Stephen Fish found that the most effective way to engage individuals in climate related issues is to create an emotional connection to the situation. For example, communicating a sense of generational responsibility when discussing how to take care of the environment causes people to reflect on how their actions may impact their future families. In addition, promoting the preservation of natural areas that are important to the community, such as beaches or parks that are threatened by climate change, often convince local citizens to join a cause. Fish also brings in a dimension of storytelling as a tool to motivate communities to take action. By highlighting individual or group successes from a diverse group of locals, people are able to visualize how they can also contribute to these efforts, and are also assured that they are not the only one trying to take on this endeavor.

Therefore, we prioritized trying to find a success story for the Menlo Green Challenge to publish on their website in order to show prospective Green Challenge participants that climate actions are very accessible to all demographics.




## How to Execute Climate Action

Stanford created an initiative called My Cardinal Green in order to engage students in creating a more sustainable college campus. Students sign in using their Stanford ID and take a 10 minute survey about their daily behaviors, such as showering or composting food in dining halls.

**Energy**

Please check the box next to items you have in your office space, dorm or home:

- ☐ Personal space heater
- ☐ Personal window air conditioning unit
- ☐ Personal printer
- ☒ Personal refrigerator
- ☐ TV, DVD player, speakers, etc
- ☐ Energy Star models of your personal appliances
- ☒ Desk or floor lamps
- ☐ Smart Strip(s) to manage energy consumption






Please answer only as pertaining to your own personal behaviors and belongings, not including roommates, suite mates or others.

How often do you do perform the following actions:

	Always	Often	Sometimes	Rarely	Never	N/A
Turn off lights in your office or room when it is bright outside	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Turn off computers and monitors when not in use	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unplug your laptop when fully charged	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use solar-powered devices or chargers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

The algorithm then calculates a personalized list of actions depending on the survey answers provided, and also makes some general campus wide recommendations. For example, in anticipation of winter break, there is a recommendation to shut down all appliances and turn off lights before leaving campus for break.



Welcome


You need 100 more points to be eligible for your incentive

0

Your Earned Points


0

Your Pending Points




REDEEM INCENTIVE

**Here's What Others are Doing**




1782

People on campus are working on earning points




316643

kWh per year have been saved by My Cardinal Green users




26499

**Promotional Actions**




Turn Off For Break! Unplug all personal appl... **MORE+**

✓ VERIFY




Turn Off For Break! Defrost and unplug your ... **MORE+**

✓ VERIFY




Turn Off For Break! Make sure all lights in ... **MORE+**

✓ VERIFY



Turn Off For Break! Close all windows in you... **MORE+**

✓ VERIFY




Turn Off For Break! Return your space heater **MORE+**

✓ VERIFY


**Your Actions to Perform**

When an action asks you to try something for the next month, please submit for verification only AFTER the month is complete.




Turn your thermostat off/knob to zero **MORE+**

✓ VERIFY X TRY ANOTHER




Purchase carbon offsets for a flight this ye... **MORE+**

✓ VERIFY X TRY ANOTHER




Eat vegan one meal per week this month **MORE+**

✓ VERIFY X TRY ANOTHER




Eat vegetarian at least one day per

✓ VERIFY X TRY ANOTHER




Volunteer on an eco-tourist trip for your va... **MORE+**

✓ VERIFY X TRY ANOTHER




Remove your personal refrigerator from your ... **MORE+**

✓ VERIFY X TRY ANOTHER



Sign up for the voluntary composting program **MORE+**

✓ VERIFY X TRY ANOTHER



Donate office supplies with recycled

✓ VERIFY X TRY ANOTHER

My Cardinal Green provided an example of how climate actions can be recommended on a localized level, and we were able to draw comparisons between Stanford's site and the Menlo Green Challenge. However, My Cardinal Green lacks a few aspects, such as the element of community building through teams, because it is an individual record of energy awareness rather than a household one. It is also more tailored to Stanford's campus than a general audience. Therefore, we were happy to see that Menlo's Green Challenge was able to address community engagement through a leaderboard and team forums for friendly competition, and wanted to focus on promoting the Green Challenge through social media in order to attract more community members to the site, thus creating more opportunities for team building.

In many circumstances, people are dedicated to the idea of fixing climate change but often do not know what physical actions to take. My Cardinal Green successfully combats this issue by providing a tailored list of actions for an individual, rather than forcing them to find actions themselves. Therefore, when analyzing the MGC, we tried to create course materials, such as the worksheet for students, that would allow students to navigate the site most effectively and find actions that were feasible for their budget and scope of impact.

### **Past Green Challenges**

The Green Challenge was previously executed in two classrooms during the 2016-2017 school year. We were able to view teacher feedback on how the challenge was conducted in the classrooms, and what elements needed to be improved.

Lance Powell, who teaches AP Environmental Science to 12th graders at Menlo Atherton High School, ran the MGC in two of his APES classes from December 2016 - May 2017. He explained how students created slide shows of their energy actions, and how the electric scooter prizes brought the challenge into perspective. However, his students struggled to calculate their energy consumption with the Pacific Gas and Electric database because it did not have the most recent months for comparison of energy data (January - April), which is when most students completed their climate actions. Overall, students became more aware of their energy consumption and the challenge started conversations in their households about how to use energy more thoughtfully.

Whitney Thwaite, who teaches 7th Grade Science at La Entrada Middle School, ran the MGC in 8 of her classes for 6-8 weeks, starting in January 2017. She noted that students found the website confusing and were unsure of how to enter actions, even after viewing the video tutorial. In future years of the MGC, she believes it would be effective for students to read example stories of how others participated in the MGC and made a visible difference in their communities. She also wants to add more action options that can be completed at school, such as recycling or reducing the number of paper trays used during lunch. Finally, she had some information about students' preferences of prizes, such as their preference of electronic devices, homework passes and extra credit.

Overall, we took these comments into account when creating our high school surveys and navigating the MGC website on our own to find areas of improvement.

## **Methodology**

Our major question for this project was how to engage the Menlo Park community in addressing climate change. To come up with approaches to answer our major question, we started by looking at the data that was at our disposal. We looked at the information provided in the Menlo Green Challenge website: the number of households that have joined the Challenge, the number of climate actions that have been taken, and the number of schools that have participated in the Challenge. We also read about the work Menlo Spark had done before with La Entrada Middle School and Menlo Atherton High School to run the Green Challenge as a project. Finally, we took Diane's comments on what worked, what didn't, and what would be interesting to find out into consideration.

With that in mind, we decided to use the following three methods for our project: online research, surveying students, and conducting interviews with teachers and Menlo Park residents. We chose to do online research because a major component of the Menlo Green Challenge is its website, so researching ways to make the website more user-friendly and attractive by creating accounts and navigating the site ourselves was important to the project's goals. Secondly, we thought researching social media strategies to strengthen the Menlo Green Challenge's social media presence would be a vital way of publicizing the Green Challenge among a young demographic. We specifically focused on ways to use Instagram as a platform for advertising the Challenge and Snapchat as a potential tool to facilitate the Challenge in classrooms. We thought surveying students in Menlo Park would give us valuable input about their familiarity with climate change and the Green Challenge, what motivated them, and what were their favorite apps. We also wanted to interview Lance Powell from Menlo Atherton High School and Whitney Thwaite from La Entrada Middle School because they had run the Challenge previously in their science class. We wanted to get their feedback on running the Challenge, their insight on how to engage students to complete sustainable actions, and their suggestions on how to improve the Green Challenge in the classroom.

One limitation we had in our methodology was that we weren't able to survey the students at La Entrada Middle School because of scheduling conflicts with Ms. Thwaite. However, her feedback on the Challenge was so insightful and useful that we thought the interview made up for our inability to survey her former students. Another limitation we had was that we heard back from only one of Mr. Powell's former AP Environmental Science students and not all of them. Nonetheless, the student's survey responses demonstrated her deeper knowledge about the MGC/climate change, and she suggested that making an app for the Menlo Green Challenge would be the right step to popularize it.



Finally, the fact that Tom Kabat is an environmental engineer might make his success story a little unrelatable to common folk trying to get into the sustainability world. However, Tom also posts tutorials online, on the site Instructables, making his do-it-yourself sustainability projects accessible to a broad audience. We hope that showing the community how he did it will encourage them to do the same.

Diane was always with us along every step of the project. She reviewed our survey and interview questions before we headed out to do fieldwork, referred us to Tom Kabat, set up a meeting with Lisa Altieri, the founder of the Menlo Green Challenge, and was notified of any project developments during weekly conference calls. Diane was an instrumental part in our making of a successful methodology.

Below are pictures of our survey and our interview questions.



## Menlo Green Challenge Survey

- 1) Are you familiar with the words "global warming" and "climate change"?
  - a) If so, please describe your thoughts on the meanings of the terms.
  - b) And do you have a preference?
- 2) Do you think climate change is relevant to your life in Menlo Park?
  - a) Why or why not?
  - b) How so?
- 3) Do you feel knowledgeable about climate change issues?
  - a) Do you feel knowledgeable about steps you can take to reduce your carbon footprint?
  - b) Why or why not?
- 4) Are you familiar with the Menlo Green Challenge?
  - a) What gets you motivated to take an action? Food, money, recognition, personal improvement/gratification, prizes?
  - b) If prizes or rewards, what kind?
  - c) Have you taken other challenges before? Which ones? What motivated you to participate?

For example, what, if any, amount in gift cards, prizes, or discounts would you want to complete the following actions? If you feel that you would be more likely to take an action if a reward was involved, please specify the award (ex: chocolate chip cookie, \$5 giftcard, hoverboard)

Taking shorter showers

Want a reward? Yes/No

If so, what?

Turning off lights when you leave a room

Want a reward? Yes/No

If so, what?

- 5) How important is a site's social media presence to your perception of it?

Not important	Very important
---------------	----------------

  - a) What are some of your favorite websites, and what do you like about them?
  - b) What are some of your favorite apps? Favorite features of those apps?
- 6) Have you taken any climate actions before? (give examples – bike or walk instead of drive, use a fan instead of A/C, cut down on meat or beef, sign letters to agencies/gov't bodies calling for actions)
  - a) What kind of actions?
  - b) How did it make you feel?
  - c) Do you think you were successful?
  - d) If not, what did you do? (e.g. double down or give up?)

- 1) a. How did you feel about running/completing the Challenge with your classes?  
b. Would you do it again?
- 2) What are ways of showing students how to easily navigate the website (step-by-step worksheet, video tutorial...) ?
- 3) What are actions that'll get the students engaged?
- 4) What are prizes that'll get students motivated?
- 5) Would a raffle system work to get the students to participate?
- 6) How do we keep students from forgetting about the Challenge after their day at school?
- 7) What are areas where the Challenge needs improvement?
- 8) What are ways we could get our surveys out to students (hand them out in class, during dismissal...)?



## **Deliverables**

### **Summary of major findings and summary:**

One aspect of our project was to identify and interview a member of Menlo Park who would be willing to sit down with us and chat about their experience “going green.” We had the chance to sit down with Tom Kabat and learn from him what it means to be environmentally friendly in his life. Tom Kabat has been involved with the green challenge since its early days, and has completed many of the actions on the site. His scope of actions was huge, he has solar panels on his house, cut a lot of meat out of his diet, uses an electric vehicle, and uses energy efficient appliances. In addition, Tom uses innovation anywhere he can in order to increase the sustainability of his lifestyle. The write up we made will hopefully inspire other members of the Menlo Park community to take action and to reduce their own carbon footprints.

This was one of the more challenging aspects of our project. We had hoped to find a family that had done smaller climate actions to show the accessibility of climate action, but that proved quite difficult during the ten weeks we had to complete the project. We are confident however, that as time progresses and as Menlo Spark establishes a bigger and bigger following, that a family that has done smaller actions with a big impact will come out of the woodworks. The benefit of that would be to show that climate action is not an elite cause, and that folks of all backgrounds can participate and can make a difference in their lives that improves their quality of life and their community.

In spite of this, our household success story from Tom Kabat will serve as an authentic, non-generic, close-to-home, story for Menlo Park residents to take inspiration from. We believe that both the “big shiny lifestyle-overhaul” story and the “small, low-cost steps with big impact” stories are essential to this narrative and are glad that we could help bring one to life for Menlo Spark.

Youth engagement is a huge opportunity for Menlo Spark to engage a demographic that typically does not have a lot of power or agency to produce change. There are certainly challenges of doing so, but there are many benefits and strategies to achieving youth engagement. In doing projects like the Green Challenge in schools, it is important to keep three general themes in mind. The first is what the core curriculum of that grade is and how to incorporate the challenge into what the class is already expected to learn in the year. The second is motivating students both through prizes and intrinsically by doing climate education that promotes empathy and a desire to act. Lastly, is encouraging continued action by inspiring youth to care about climate action and by giving them the agency and platform to take action. Intrinsic motivation can be difficult to achieve and can require some more planning and work, however this is something that ultimately can lead to lasting habit changes and action.

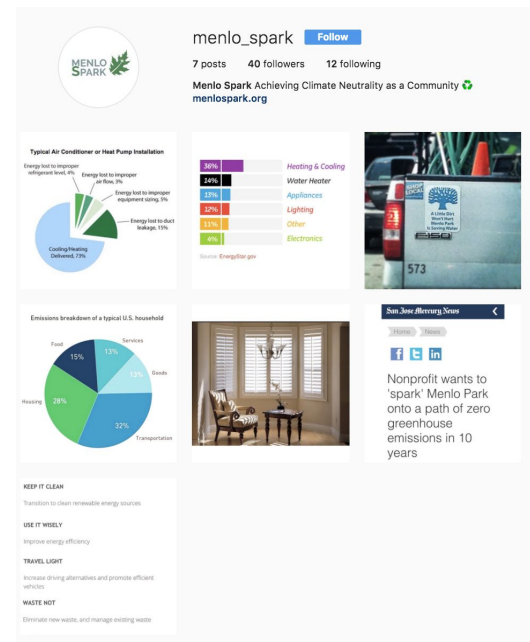
We observed that while it can be hard to balance this kind of project in schools where there are a lot of other needs that the school is trying to meet. However, we found that schools are an important platform for students to use in order for their voices to be heard and to be able to have some agency in taking action on issues they care about. As mentioned, in other arenas, youth don’t typically have power or autonomy to act on larger issues. This project has shown that youth action in school can actually be quite powerful. For example, some of Ms. Thwaite’s

middle school students learned about how waste was negatively impacting the environment and as a result, some students took initiative to reduce cardboard waste during lunch at the school. They successfully reduced the number of cardboard boxes being used at lunch dramatically, this shows that youth can have a huge and meaningful impact but they need to be motivated to do it and to be given a platform where their voices are listened to and they feel they have autonomy. In all, giving youth access to information, platforms such as school, and tools they already enjoy such as phones and apps can be motivating and meaningful.

In terms of technology use, students are very motivated to participate in projects that utilize tools they already care about such as Snapchat, Instagram, and other interactive apps. We believe that a Green Challenge app would be incredibly useful and that if there was a simple form of it for students, they may be encouraged to form teams and compete with each other. This would be especially powerful in multiple classes in the school did the challenge at the same time, increasing competition and motivation to complete actions.

Our social media research focused around Instagram and Snapchat. With Instagram, we found that an ideal account has a clear theme, original and high quality images, short captions and a reliable posting schedule. These features all allow an account to grow in following much more quickly and have a clean, professional social media presence. Since Menlo Spark's Instagram is not currently in use, hopefully these tips will help to revitalize the account and thus promote their public image to youth who use Instagram on a daily basis. Our Snapchat research was geared towards using Snapchat as a tool for learning in the classroom, especially in conjunction with the MGC. We found that geofilters and stories are effective advertising tools if Menlo Spark was to hold an event promoting the challenge, and Snapchat streaks could be used as a tool to carry through climate actions.

Diane wanted us to find a way to work the challenge into schools by integrating it in with core curriculum, and at the suggestion of Mr. Powell we did research on the Next Generation Science Standards. Many of the Earth and Human Activity Standards for Middle and High school fit in directly with the Green Challenge. Multiple standards include understanding concepts like climate change, as well as mitigation options and processes like recycling. Teachers want a concrete way to work the challenge into their curriculum, and by connecting the



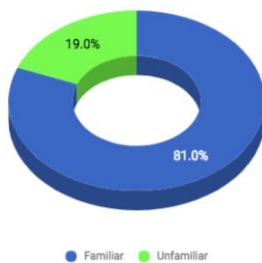


challenge with different lesson plans, such as the AP Environmental Science Home Energy Audit lab, we ensure that teachers and students get the most out of their challenge involvement. The Energy Audit Lab, for example, has you determine your home's energy usage and brainstorm ways to decrease, which is directly tied to the mission of the challenge.

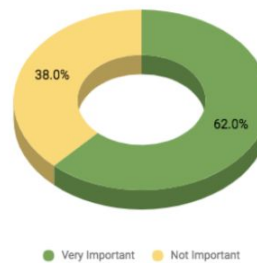
## Data:

Below are five pie charts depicting the results from the 9th grade student surveys.

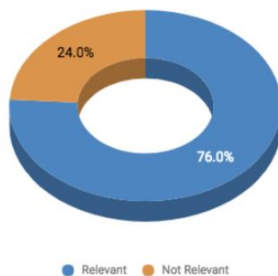
Student Familiarity with Climate Change



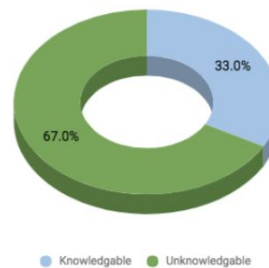
Importance of Web Site Social Media Presence



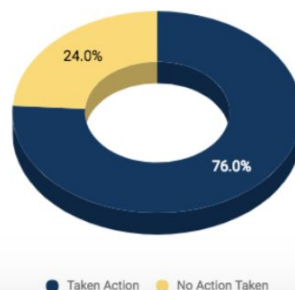
Relevance of Climate Change in Menlo Park



Students Knowledge About Climate Change



Percentage of Students that have Taken Sustainable Actions



## **Data and Deliverable Files:**

Based on our findings using our specific methodology, we have created documents that comprehensively cover each area within our three main research questions. When collecting data, we sometimes found that another deliverable was made through our new findings, those are all collected here in this drive. Individual files containing our final deliverables can be found in the “Final Deliverables” folder. The rest of the folder is comprised of presentations, raw data such as notes from meetings, interview logs, etc. The team Google Drive is organized in several folders including the following:

- Final Deliverables Folder
  - Green Challenge Project Worksheet for Schools
  - Green Challenge Search for Family Success Story Newsletter Story
  - Tom Kabat Household Success Story
  - Video Website Tutorial
  - Editable Written Website Tutorial
  - Guidelines to Next Generation Science Standards
  - Social Media Strategy Write-Ups for Instagram and Snapchat
  - Strategies for Engaging Students in Climate Change
  - Teacher Outreach Strategies
- Raw Data, Completed Surveys, Interview Logs
  - This folder contains all of our raw data
  - This data was used to draw conclusions and make recommendations
  - All completed surveys (names omitted if they were included at all in the first place) can be found here in their original form before interpretation and compilation.
  - Thorough interview logs are also found in this folder including all teacher interviews and the interview with Tom Kabat
- Notes and Final Notes
  - All notes from all meetings with Diane
- Final Presentation and Final Scope of Work - Midterm
  - Our midterm and final presentations along with the original scope of work document
  - These can be used to replicate methodology more thoroughly or to find specific charts or images we made specifically for the presentations
- Photos
  - All photos we took of the schools and work
- Project Resources
  - Information we were provided with going into the project
- Reflections
  - All class reflections
- Survey and Interview Questions
  - All questions we asked, or planned to ask, teachers, students, and Mr. Kabat

The link to the Google Drive can be found below:

<https://drive.google.com/drive/u/0/folders/0ACHL85qgOnyWUk9PVA>

## **Recommendations:**

Here are some of our recommendations based on our findings, categorized by theme:

**Website:** In the short term, we hope that our tutorials will make it easier for potential green challenge users to interact with the site. In the long term, we hope that the site will become more user-friendly through some minor tweaks and adjustments.

**Working with students:** We recommend using technology in the classroom to incentivize students to get involved and to use tools they are already using for climate actions such as snapchat, instagram, and a potential Green Challenge app. We also recommend aiming to produce lesson plans in conjunction with the Green Challenge that will encourage intrinsic motivation and care for the issues of climate change, sustainability, and environmental stewardship. If students care about the issue and understand why it is so important to their own lives and to the lives of other living beings (family, or polar bears for example), they are more likely to follow through and sustain climate action over time.

**Incorporating core curriculum:** We suggest that Menlo Spark give teachers a list of the Next Generation Science Standards that most directly pertain to their classes. We also hope that giving sample lesson plans catered towards each specific grade and labs that can be used with the green challenge will incentivize teachers to bring it into the classroom.

**Social Media:** We recommend increasing the use of social media in Menlo Spark as a whole and in the Green Challenge. By using some of the tools outlined in the social media write up, usership of the Green Challenge may be increased. In addition, students in particular use social media a great deal, therefore incorporating social media use into the Green Challenge could be an engaging incentive for students.

**Household Success Story:** We are very pleased with the success story of Mr. Kabat and believe that his work will inspire others to lead more sustainable lives as well. We recommend also continuing to look for a lower-cost success story that shows how smaller steps can still make a large impact in climate action.

## **Conclusion**

Now that we have gathered data on social media accounts, recorded teacher feedback & student preferences, researched core curriculum standards, and drafted a list of website suggestions, we believe that the following are potential impacts of our work on Menlo Spark and the Menlo Green Challenge.

We would like to see an increase in community and youth participation. We learned that getting people to engage in sustainable behavior and actively participating in the Challenge can be hard. Nonetheless, it is a worthwhile task to try to get as many people involved given how important sustainability is. We would like for participants to find the website easy to navigate and use the video tutorial and the guidelines as needed. This will hopefully lead to an increase in user motivation, which is important because accessibility and intrinsic motivation are important for a lasting impact. One of the biggest ideas that came through our interviews and through working with the idea of motivation is that intrinsic motivation is difficult to achieve but ultimately what leads to lasting actions. We would also love it if the Menlo Green Challenge becomes incorporated into the AP Environmental Science curriculum and a middle school science class lab. From our interviews, we sensed that the teachers were motivated to bring the MGC into their classes. Getting students and young people involved in the Menlo Green Challenge by making its social media presence remarkable would be fantastic. Empowering youth to take action on what they care about intrinsically is vital because youth do not typically have a lot of autonomy or power to act on larger issues, and our project shows that not only is youth participation in sustainability possible, but it is also important and impactful.

Overall, this project has showed us how to bridge the gap between intentions and execution of intentions, especially in scenarios where there are many barriers to sustaining behavioral changes. We hope that our recommendations and work on the MGC will help engage the Menlo Park community and its youth in climate action in the future. We believe that successful implementation of the MGC will inspire other cities to pursue a similar course of action.

## **Extending Thanks:**

To conclude, we want to thank Menlo Spark and Director Diane Bailey for the help and guidance throughout this project. Our weekly calls and in person meetings were immensely helpful in keeping the project on track. We could not have done this project without the support from Diane and are grateful to have had the chance to contribute to such a wonderful organization.

We would also like to thank Professor Deland Chan for her dedication to this class and for organizing these incredible opportunities for us. While we all feel grateful to be contributing to such wonderful and important causes, this project has also contributed deeply to our own personal growth and learning. That would not be possible without the hard work of Professor Chan organizing this class and cultivating our learning throughout.

We are grateful and humbled to have had the chance to participate in this service-learning course and are looking forward to see how Menlo Spark progresses in the future as well as how future students grow in the sustainable cities class. Many thanks!

**Bibliography:**

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