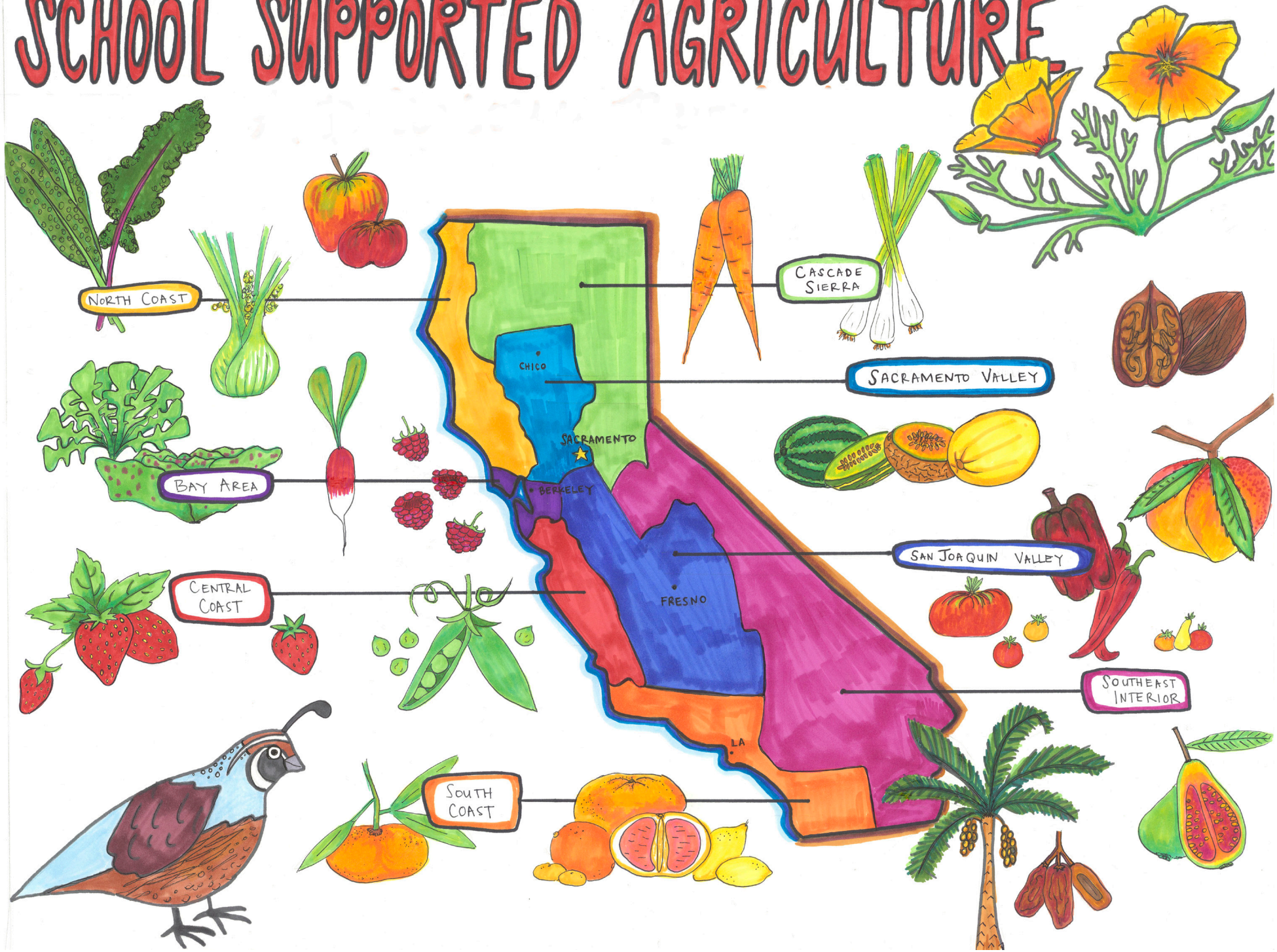
THE EDIBLE SCHOOLYARD PROJECT

SUMMER TRAINING WORKBOOK

2019

SCHOOL SUPPORTED AGRICULTURE



June 26, 2019

WELCOME TO SUMMER TRAINING!

We are very happy that you are here. We have been working diligently to develop a training program that will provide you with a solid understanding of our Edible Education pedagogy and practices.

The resources compiled in this workbook are designed to support the content delivered in each session. We hope your experience this week provokes reflection and strengthens your understanding of your own teaching practices and classroom culture.

We are facilitating the sessions but we also recognize the wealth of experiences, skills and knowledge that exist in this training cohort. To that end, we intentionally scheduled time this week to share your work and learn from one another. We hope you will take full advantage of this time to learn best practices from around the country – and world!

Thanks to generous support from the Leslie Family Foundation, the Jaffe Family Foundation, and the Whole Kids Foundation we were able to provide scholarships to many of our participants this year.

Here is to an informative, inspiring, and joyful training! Thank you for being here with us. We value the work you are doing for our kids and we are looking forward to spending this week with you.

Warmly,

Angela McKee Brown, Director of Education
The Edible Schoolyard Project

Wednesday, June 26th

Breakfast and Registration

7:30 am to 8:30 am
Dining Commons

Opening Session

8:30 am to 10 am
Dining Commons

Core Programming I

10:15 am to 12:00 pm
Kitchen, Garden, Staff Lounge

Lunch

12:00 pm to 1:00 pm
Dining Commons

Core Programming II

1:15 pm to 3 pm
Kitchen, Garden, and Staff Lounge

Break

3:00 pm to 3:15 pm
Refresh at the Dining Commons

Grant Session

Presented by the Whole Kids Foundation and California Certified Organic Farmers

3:15 pm to 4:00 pm
Dining Commons

Reflection & Closing

4:00 pm to 4:30 pm
Dining Commons

REFLECTION

IT IS IMPORTANT TO PAUSE AND REFLECT ON WHAT YOU HAVE LEARNED EACH DAY. THIS DOCUMENT PROVIDES YOU A SPACE TO REFLECT, CAPTURE CURIOSITIES, AND WILL SERVE AS A FUTURE REMINDER OF TOPICS TO EXPLORE AND PEOPLE TO CONNECT WITH.

TODAY I LEARNED:	I'D LIKE TO DISCUSS WITH MY TEAM:
I WOULD LIKE TO LEARN MORE ABOUT:	INTERESTING CONVERSATIONS* I HAD TODAY:
	* REMEMBER TO GET THEIR CONTACT INFO!

CAPTURE

A SIGHT	A TASTE	A TOUCH	A SOUND	A SCENT

Thursday, June 27th

Breakfast

7:45 am to 8:45 am
Dining Commons

Core Programming II

9 am to 10:45 am
Kitchen, Garden, Staff Lounge

Break

10:45 am to 11:00 am
Refresh at the Garden Kiosk

Talk Time

11:00 am to 12:00 pm
Amphitheater

Lunch

12:00 pm to 1:00 pm
Dining Commons

Breakout Sessions I

1:15 pm to 2:30 pm
Kitchen, Garden, and Staff Lounge

Break

2:30 pm to 2:45 pm
Refresh at the Dining Commons

Plenary with Alice Waters

2:45 pm to 4:00 pm
Dining Commons

Reflection & Closing

4:00 pm to 4:30 pm
Dining Commons

Movie Night: Inventing Tomorrow

5:00 pm to 7:30 pm
Optional
North Berkeley Library

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CAPTURE

A SIGHT	A TASTE	A TOUCH	A SOUND	A SCENT

Friday, June 28th

Breakfast

7:45 am to 8:45 am
Dining Commons

Depart for Site Visits

9:00 am
Dining Commons

Site Visits

10:15 am to ~2:00 pm
Greater Bay Area

Family Night Out

4:00 pm to 6:00 pm
Limited Capacity
Kitchen

OR

Networking Happy Hour

4:00 pm to 6:00
Optional
Los Cilantros
3105 Shattuck Ave, Berkeley, CA 94709

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CAPTURE

A SIGHT	A TASTE	A TOUCH	A SOUND	A SCENT

Saturday, June 30th

Breakfast

7:45 am to 8:45 am
Dining Commons

Breakout Sessions II

9 am to 10:45 am
Kitchen, Garden, Staff Lounge

Break

10:45 am to 11:00 am
Refresh at the Garden Kiosk

Skill Share

11:00 am to 12:00 pm
Kitchen, Garden, Staff Lounge

Lunch

12:00 pm to 1:00 pm
Dining Commons

Action Planning

1:00 pm to 2:00 pm
Dining Commons

Survey, Group Photo, and Closing

2:00 pm to 3:00 pm
Dining Commons

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CAPTURE

A SIGHT	A TASTE	A TOUCH	A SOUND	A SCENT

Meet the Team

Esther Cook
Senior Chef Teacher & Kitchen Operations Manager
Since the inception of the Edible Schoolyard in 1997, Esther has been Head Chef Teacher in the Edible Schoolyard kitchen. Over the past twenty two years, she has developed a portfolio of innovative kitchen lessons linked to classroom curriculum and life skills. Ms. Cook brought years of cooking experience to her position as founding Chef Teacher. She has worked the line in Bay Area restaurants, baked bread into the midnight hours in New Hampshire, and catered for Garden District folks in New Orleans. She has collaborated with local theater and bookbinding artists to teach cooking, book-making and storytelling to immigrant children in Oakland, her home of 30 years. While working as a line cook at Citron in Oakland, Ms. Cook also volunteered for Market Cooking for Kids – a CUESA program that linked local farms and chefs to public schools to provide hands-on cooking experiences to the students. It was the profound staying power of these interactions with youth that led her to pursue teaching cooking to children. Esther grew up on a farm in rural New England, where meals came from the garden and were shared around the table with family and friends. As an adult the quality of those times informs the experience she strives to create with her students. It is her belief that the kitchen is a natural classroom brimming with delicious educational opportunities.

Griselda Cooney
Senior Chef Teacher & Family Engagement Manager
Griselda immigrated to the United States from Mexico when she was a child. She moved to a ranch in Sonoma County, and realized the new environment wasn't so different from the old home in Jalostoticlan. Her parents still planted, grew, harvested and made use of just about everything – from cactus, chili peppers and aloe to corn and tomatoes. As she grew older she came to truly appreciate the difference in taste and nutrition between homegrown and store-bought foodstuffs. As a cook, she is self-taught in American cooking and learned traditional Mexican cooking from her mother. She learned how to plan and prepare meals from humble, fresh ingredients, and to make use of everything in order to maximize flavor and minimize waste. Griselda is the mother of three and comes from a large family where cooking is shared and enjoyed by all ages, and teaching and learning in the kitchen is intertwined with all aspects of life. Griselda volunteered in the Edible Schoolyard Kitchen for five years, before joining our team as the Family Nights Out Coordinator in January 2012. Griselda took a full-time position as a Chef Teacher in the Edible Schoolyard Kitchen in March of 2016

Elle Ford
Public Health Education Program Intern
Elle was born and raised in Las Vegas, NV where she grew up knowing she wanted to lead a life that placed helping others at the forefront. As a kid she started clothing drives in her neighborhood and lead community members to feed those in need. It wasn't until she began her journey in college that she found she could pursue a career making changes to improve others' lives in a more sustainable and enduring manner. After earning her B.A. in Psychology and Anthropology at the University of Nevada Las Vegas, she ventured to

Berkeley where she is currently completing a Master's Degree in Public Health with an emphasis on Maternal, Child & Adolescent Health with a focus on Food Systems.

Elle is the first Public Health Education Program Intern at the Edible Schoolyard and could not feel any more at home. Internships are a place to find a career path that you are passionate about and Edible Schoolyard has been nothing short of that. Only a month in and she has gotten to catch a glimpse of the phenomenal work on education, nutrition, youth empowerment, community engagement, food access and sustainability. This summer she is working with Nick Lee on Berkeley High School's Career Technical Education Public Health curriculum, with Ashlee Johnson on the high school gardening internship program, and creating a media suite for the organization. In her spare time she loves yoga, cooking, jiu jitsu and making people laugh.

Jacqueline Garrett
Operations Coordinator, Garden Teacher
Born and raised in Southern California, and living in Northern Arizona during her college career, Jacqueline has always found herself outside, whether it be in swimming in the ocean or exploring hiking trails. She attended Northern Arizona University as well as several universities in France, obtaining her B.A. in Sociology and French. Between volunteering at a farmers market and soup kitchen abroad, as well as helping organize a student-run food cooperative in Flagstaff, AZ, food security and community support has been a huge priority to her.

Following graduation, Jacqueline went on to be a French teacher at Martin Luther King Jr. Middle School in Berkeley where she connected with the dynamic staff at The Edible Schoolyard Project, which ultimately led her to joining the team in 2018.

Jacqueline wears several different hats in her role-from coordinating the Edible Schoolyard Project's social media presence, to making sure bills get paid. She also teaches lessons in the garden because she loves being able to work with students in a collaborative, outdoor setting. In her spare time, she enjoys bringing friends together, outdoor runs, listening to Beyoncé, and taking pictures on her film camera.

Ashlee Johnson
Garden Teacher
From a young age, you could always find Ashlee somewhere outside exploring nature and the environment. Originally from the Bay Area, Ashlee lived on the East Coast in New Jersey from 8th-12th grade where she experienced the beauty of seasons and loved spending time by the lake in the Poconos. After graduating with a B.A. in Environmental Studies from the University of San Francisco, Ashlee spent two years as an AmeriCorps member where she discovered her passion and drive to create meaningful outdoor experiences for a diverse community of youth. As an AmeriCorps member, she worked with the Watershed Project, a local nonprofit in Richmond focused on providing programming for the Bay Area community to interact with and protect their local watersheds. Ashlee's first experience with the Edible Schoolyard was as the Garden

AmeriCorps teacher during her second year of AmeriCorps. After her year at ESY she went on to run a garden program at Cleveland Elementary school in Oakland, where she collaborated with K-5th graders to manage 6 mini gardens, run seed to table events, organize plant sales, and run farm stands for the community. This year Ashlee returned to the Edible Schoolyard as a garden teacher and is excited for this new journey. In her free time Ashlee enjoys hiking, cooking and sharing meals with friends, and playing music.

Wendy Johnson
Garden Consultant, Green Gulch, Edible Schoolyard Berkeley
Wendy is a Buddhist meditation teacher and organic gardening mentor who lives in the San Francisco Bay Area. Wendy has been practicing Zen meditation for 35 years and has led meditation retreats nationwide since 1992 as an ordained lay dharma teacher in the traditions of Vietnamese teacher Thich Nhat Hanh and the San Francisco Zen Center. Wendy is one of the founders of the organic Farm and Garden Program at Green Gulch Farm Zen Center in Marin County, where she lived with her family from 1975 to 2000. She has been teaching gardening and environmental education to the public since the early 1980s. In 2000, Wendy and her husband, Peter Rudnick, received the annual Sustainable Agriculture Award from the National Ecological Farming Association. Since 1995, Wendy has written a quarterly column, "On Gardening," for Tricycle Magazine, a Buddhist review. She is the author of *Gardening at the Dragon's Gate*, a book that has distilled her lifetime of experience into an extraordinary celebration of inner and outer growth, showing how the garden cultivates the gardener even as she digs beds, heaps up compost, plants flowers and fruit trees, and harvests bushels of organic vegetables. She was honored in The Best Science and Nature Writing 2000, published by Houghton Mifflin. Wendy is a mentor and advisor to the Edible Schoolyard, a project that she has been involved in since in its inception in 1995.

Emilie Kramer
Director, Operations
Emilie Kramer has been passionate about food since a young age. A Bay Area native, she grew up in Oakland where she helped her family garden, cook meals, and make wine in her father's garage. Having worked in the offices of Alice Waters's restaurant, Chez Panisse, for over ten years, Emilie was further exposed to delicious, organic meals in addition to the social food movement that Alice helped create and foster, Edible Education.

This inspiration took Emilie on a path to earn her Master's Degree in Holistic Nutrition and Education, from JFK University in 2013. From there, Emile had the opportunity to merge her passion for food with her passion for food education and social change. She is now managing the offices of the Edible Schoolyard Project. Emilie has spent extended periods of time in New York City, Scotland, Italy and Peru. She earned her B.A. in Anthropology from University of California, Berkeley and has studied classical piano since the age of seven. She resides in the Temescal area, and likes to spend time with her awesome family and their dogs.

Nick Lee
Program Manager
A native of the East Bay, Nick grew up with a love of eating and cooking. Nick studied biology at Williams College in rural, western Massachusetts. There, surrounded by small

organic farms producing incredible vegetables, meats, and cheeses he found himself with half a pig in the freezer and a weekly CSA box on his doorstep. After seeing the farms and people behind those foods he dove into the sustainable food movement and helped start an organic garden and food advocacy group on campus. After graduating in 2011 Nick spent 18 months cooking in restaurants in New York and in the Lake Tahoe area. Nick started at the Edible Schoolyard Project in 2012 as an AmeriCorps Service Member in the kitchen program. Nick taught cooking classes daily as an Assistant Chef Teacher and Chef Teacher from 2013 to 2018 and is now a Program Manager for ESY developing a new high school class and internship program focused on Public Health.

Angela McKee Brown
Director of Education
Born and raised in Houston, Texas, Angie was taught about the power of food in her mother's kitchen. Before joining the Edible Schoolyard Project, Angela served as the Director of Innovation and Strategy with San Francisco Unified School District's Future Dining Experience where she oversaw a $20 million bond focused on redesigning the school food system of San Francisco. She is a 2016-2017 Stanford University d.school Civic Innovation Fellow and she holds a Master's in Food Studies from NYU. Angela serves on the board of Educate2Envision International, a non-profit that invests in youth from underserved areas to be their own innovators in tackling poverty.

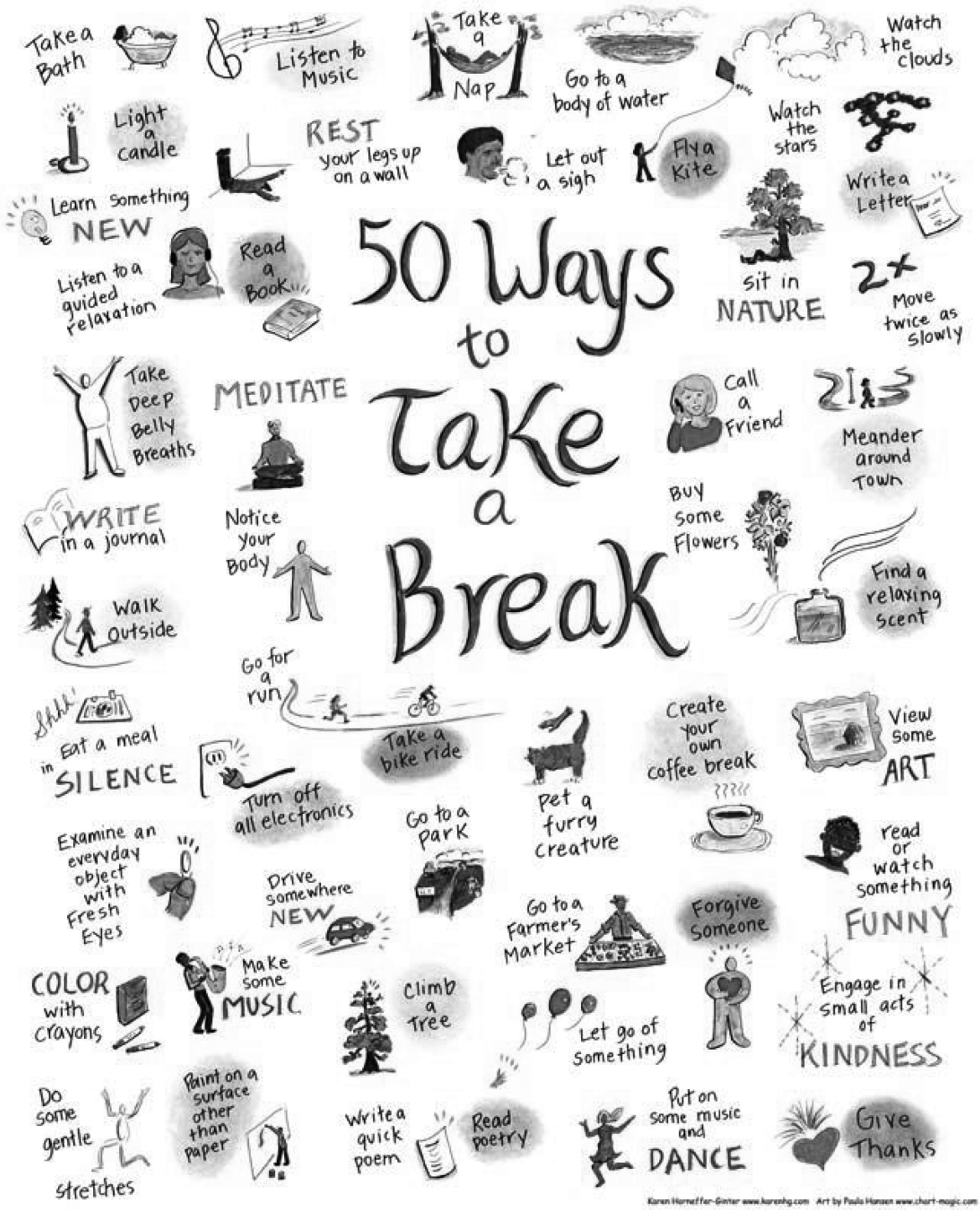
Hannah Love
Associate Director, Development
A fourth generation Bay Area native, Hannah Love began her food education around the table cooking and eating with family and friends. She also worked at Chez Panisse for eight years after college graduation. Having worked in the non-profit sector for nearly 15 years, she has developed a breadth of experience in scholarly publishing, higher education and communications. She spent more than a decade working at University of California Press where she published books on public health with a focus on policy, environmental health and social justice. In her development role at ESYP, Hannah is focused on program growth and equitable fundraising that supports social change. She brings with her a deep passion for the importance of human connection and believes in the power of diverse communities working together. Prior to joining the Edible Schoolyard Project, Hannah worked as the executive assistant to Alice Waters. She is a very proud mother of two and loves spending as much time in West Marin as possible.

Geoff Palla
Garden Manager & Teacher
Geoff joined the Edible Schoolyard Berkeley team in August 2008 as the Garden Manager and Teacher, bringing over ten years of work experience on small-scale organic farms to the program. Geoff has developed his skills through a range of experiences, from observing international food systems to owning and operating his own two-acre market farm. Prior to ESYB Geoff managed the 3.5-acre culinary garden at Copia, the American Center of Wine, Food and the Arts, in Napa. The garden was a public resource for organic techniques and general garden information, offering classes and workshops. The Edible Schoolyard Berkeley is a perfect match for his investment in organic techniques, sense of humor, and his passion for teaching middle school youth.

Tessa Snyder
Garden Americorps
Tessa is the Edible Schoolyard's Garden Americorps member for the 2018-2019 school year. She is a Bay Area local and attended King Middle School – and the Edible Schoolyard program – as a student. She graduated from UC Santa Cruz in 2016 with a degree in Environmental Studies, focusing primarily on Sustainable Agriculture.

Russell Sterten
Project Coordinator
As Project Coordinator, Russell helps manage the Edible Schoolyard Project's volunteer program, leads tours of the garden and kitchen classrooms, curates and maintains the online resource library, and supports with online communications. He got into this work because during his time as a long-term Kindergarten substitute teacher he saw that students got the most excited when they were going to their gardening and cooking classes. Russell is an enthusiastic cook and loves having friends over to make pizza and play board games.

Jason Uribe
Garden Teacher
Jason is a native to the Bay Area, having grown up in Oakland, CA, and attended several community colleges in the area, focusing on Environmental Science and Urban Agriculture. After graduating high school, Jason participated in two years of AmeriCorps programming at the East Bay Conservation Corporation, where he was introduced to the concept of community service and environmental education. His love for the natural world has lead him to places like Kings Canyon National Park and Alaska, where he worked with high school students maintaining trails and teaching local ecology. While working as coordinator for the Student Conservation Association office in Oakland, CA, Jason met someone who managed a ½ acre urban garden with high school students at Berkeley Youth Alternatives (BYA), and eventually was hired to manage the program, teaching students how to grow organic vegetables, maintain a nursery, and start a CSA business. At BYA Jason realized his love for working with young people, creating opportunities to speak out on social and injustice issues and he went off to work as the Farm Manager for People' Grocery. When Jason is not teaching middle school students about gardening at the Edible Schoolyard, he enjoys spending time with his family, reading short stories, and playing pick-up games of basketball on the weekends.


50 Ways to Take a Break
Take a Bath
Listen to Music
Take a Nap
Go to a body of water
Watch the clouds
Light a candle
REST your legs up on a wall
Let out a sigh
Fly a Kite
Watch the stars
Learn something NEW
Write a Letter
Listen to a guided relaxation
Read a Book
sit in NATURE
2x Move twice as slowly
Take Deep Belly Breaths
MEDITATE
Call a Friend
Meander around town
WRITE in a journal
Notice your Body
Buy some Flowers
Find a relaxing scent
Walk Outside
Go for a run
Eat a meal in SILENCE
Take a bike ride
Create your own coffee break
View some ART
Turn off all electronics
Pet a furry creature
Examine an everyday object with Fresh Eyes
Go to a park
read or watch something FUNNY
Drive somewhere NEW
Go to a Farmer's Market
Forgive Someone
COLOR with crayons
Make some MUSIC
Climb a Tree
Engage in small acts of KINDNESS
Let go of something
Do some gentle stretches
Paint on a surface other than paper
Write a quick poem
Read poetry
Put on some music and DANCE
Give Thanks
Karen Horneffer-Ginter www.karenhg.com Art by Paula Hansen www.chart-magic.com

Inclusive Practices

1. Put relationships first—work to build community. Actively support your community.
2. All students belong!
3. Notice Power dynamics in the room— be aware of your priviledge.
4. Create space for multiple truths—speak your truth—seek authentic understanding of truths that differ from yours.
5. Be Kind and brave. Lean into discomfort. Sometimes the best conversations are not easy.
6. Make space for self-care. Check in and provide support.
7. Cultivate self awareness around lived experiences as a pathway to build empathy
8. Take responsibility for the impact of your words regardless of intent.
9. Practice active listening. It's a priviledge to hear someone's story.

The Edible Schoolyard Workplace Culture Principles

MISSION AND STRATEGY IS THE METRIC

In every decision our mission and our specific objectives are our key consideration.

PROFESSIONALISM

While our style as individuals and as team might be easy going, our attitude towards our work is extremely professional - we seek to maintain the highest standards of quality and depth delivery, productivity and effectiveness.

WE HAVE FUN!

We bring positivity, joy and laughter to our work with each other. We get our jobs done and we do great work, and we have an incredible amount of fun doing it. We also respect the power of the reset button :).

WE WORK COLLABORATIVELY

We aim to have transparency and openness. Every team member is able and encouraged to weigh in and contribute to ideas and decisions. The team respects decisions, regardless of initial personal views, and endeavors to implement them with excellence.

WE ARE ALL STUDENTS

We approach our work with humility and the recognition that sometimes failure is the best teacher. We value curiosity, experimentation, and messy thinking.

CHERISH FEEDBACK AND OFFER IT RESPONSIBLY

We believe in iterative learning and professional growth. When we give feedback, we do so constructively.

RESPECT

We respect and care for each other and our community. We are thoughtful and aware of how we impact others.

WE ARE COMMITTED TO DEVELOPING OUR CULTURAL HUMILITY

Individually and organizationally, we explore the impact of culture and identity on the schooling experience, examine the influence of race, power, and privilege on the educational process. We seek culturally responsive pedagogy and practices to ensure access for all student – especially those historically under-served by the educational system. We engage families as collaborators in this process and aim to create physical and emotional spaces that reflect and celebrate the diversity of our community.

WE CELEBRATE THE POWER OF FOOD

Food connects people, places, ideas, and the natural world. We recognize the richness of food in its complexity and seek to learn about our own and others' relationships to food with curiosity and an open mind. We believe food sustains body and spirit. We champion food that supports the wellbeing of farmers, communities, and the planet.

Norms of Collaboration

Tools for productive communication between group members.

PAUSING

Pausing is based on "wait time" research indicating higher-level thinking takes three to five seconds and the time changes quality of thinking. Four kinds of pausing allow this processing. The first is after a question is asked. The second is after someone speaks. A third type is under the control of the speaker. "Give me a moment and I will answer." The fourth type of pause is a collective pause formally structured by the group. Some pauses are decided by the group and some initiated individually.

PARAPHRASING

Paraphrasing is one of the most valuable and least used communication tools in meetings. A paraphrase can be used effectively with a question. First paraphrase, and then ask a question. Practice this skill and notice what happens to the dynamics of the conversation. Paraphrasing aligns the parties and crease a safe environment for thinking. Levels of paraphrasing may include any of the following: clarify speaker statement; summarize what was said; or shifting what was said to include an overarching purpose.

PUTTING IDEAS ON THE TABLE

Ideas are the heart of group work. In order to be effective, they must be released to the group. "Here is an idea for consideration," or "I am putting this idea on the table." It is equally important to know when to remove an idea from the table. Use signal words such as "I think this idea is blocking our thinking and I want to remove it from the table." When ideas are "owned" by individuals, other group members' responses tend to reflect their feelings toward the speaker, and may not be specific to the ideas presented.

PAYING ATTENTION TO SELF AND OTHERS

Meaningful dialogue and discussion is facilitated when each group member is conscious of oneself and others. This consciousness includes being aware of your own and others posture, gesture, and other non-verbals. Paying attention to self and others could include the amount of talking, the amount of silence, or responding to others' information delivery or language style.

ACKNOWLEDGE THE DIFFERENCE BETWEEN INTENT AND IMPACT

We have noticed that overwhelmingly, when someone does or says something that causes harm, or supports the values of systemic power, it is not their intention to do so. We also have seen that a person denying the harm they have caused because they were well intended often causes more harm. The ask is that we each do the work to acknowledge that our intent and the impact of our actions are two different things, and to take responsibility for any negative impact we have. (This can be as simple as apologizing.)

NO ONE KNOWS EVERYTHING, TOGETHER WE KNOW A LOT

In any conversation, especially ones about systemic power (be it race, class, gender, etc.), we know that each person is coming to the conversation with different levels of lived experience and embodied expertise. We also believe that each person has something to contribute to the conversation. This agreement ask that we all practice being humble, and look for what we have to learn from each person in the room. It also means we all have a responsibility to share what we know, as well as our questions, so that others may learn from us.

Norms of Collaboration (continued)

PROBING FOR SPECIFICITY

Human brains are not always designed for specificity. We often form quick generalizations from fragments of information. These quick judgments based on assumptions can cause difficulties in communication. Five areas contributing to overuse of generalizations are vague nouns and pronouns, vague action words and comparators, rule words and universal quantifiers. Probing action asks members to remove the generalization and cite the exact data.

PURSUING A BALANCE BETWEEN ADVOCACY AND INQUIRY

Try to spend equal amounts of time and energy advocating for one's own ideas and inquiring into the ideas of others. Creating a balance of advocacy and inquiry requires both emotional and cognitive resources. This balance is most necessary at the exact point when many group members are least likely to want to inquire into the ideas of others. It is at the moment of greatest disagreement that this norm makes the biggest difference for productive communication.

What is an Edible Education?

Edible education places the child at the center of their learning and uses food to engage all aspects of their education.

Through growing, processing, cooking, eating, studying, talking, and thinking about food, students develop skills, knowledge, and behaviors that enrich their academic and nonacademic lives, bolster their growth as individuals and in relationships, and cultivate meaningful engagement with their own health, the health of their communities, and the health of the planet.

Central to the theory of edible education is that all learning is integrated. The skills, behaviors, and knowledge that students learn while cooking support their academic learning, while an "aha" moment in the academic classroom inspires their work in the garden; the propagation work from the greenhouse gives them the patience and focus they draw on while practicing violin later on, which serves as a touchstone for the power of persistent practice that allows them to master that new knife skill and to finally get the quadratic equation after hours of practice problems, and around and around.

THE PRINCIPLES OF EDIBLE EDUCATION LAY OUT THE PEDAGOGY OF OUR WHOLE-CHILD—AND WHOLE-SCHOOL—APPROACH TO EQUITY AND LEARNING IN KITCHENS, GARDENS, LUNCHROOMS, AND CLASSROOMS.

1. **Food is the perfect teacher.** Every discipline—math, science, the humanities—comes to life in the learning laboratory of a garden or kitchen classroom. In the lunchroom, teachers and cooks alike use daily meals to feed students' minds as well as their bodies.
2. **Children learn by doing.** The hands-on experience of growing and preparing food teaches students the value of real work, collaboration, and care-taking. Social responsibility and stewardship become deeply personal, and students feel empowered.
3. **Children learn with all their senses.** When children's senses are awakened—and they can taste, smell, touch, hear, see—they experience the world around them with new richness and complexity.
4. **Children thrive in nature.** When children grow food, cook, eat together, and return nutrients to the soil, they come to respect and appreciate their interconnectedness with the cycles of life.
5. **Good food is a right, not a privilege.** When public schools make a free, delicious, organic school lunch for every student, we address critical social inequities and truly nourish every child.
6. **Schools and sustainable farms support each other.** A sustainable set of criteria for buying school food means investing in the local economy and community.
7. **The cafeteria is the heart of the school.** Every day, students discover how the ritual of eating together at the table expresses the values of nourishment, stewardship, and communication.
8. **Beauty is a language of care.** Beauty communicates to students that we value them. An environment where careful thought has gone into everything, from the colors on the walls to the plates on the tables, communicates to children the practice of noticing and cultivating beauty in their lives and the world.

Pedagogy and Practices

We believe that a student's experience is critically important to their ability to learn.

When students feel safe, happy, seen, respected, and excited about their work, they engage and learn much more fully (and the converse is true as well—a student who feels unhappy, insecure, or alienated faces many more challenges in successfully reaching learning goals). When planning a lesson or developing our curriculum, articulating how we want students to feel in the space is as important as defining our learning objectives or developing lesson content.

This does not mean that discomfort has no place in our classrooms—we believe that taking risks is a vital part of development. Making mistakes and having the opportunity to get hurt in small ways are the foundation of keeping us safe later in life. But, every step of the way, our approach aims to make sure that everyone involved—teachers, students, and volunteers alike— get the most out of their time together through building a strong classroom culture based on collaboration, mutual respect, and equity.

We find that active culture-building in our classrooms also serves as an answer to what often is portrayed as one of teaching's most vexing challenges: behavior management. In our experience, building a strong classroom culture could be compared to practicing preventative medicine as opposed to waiting until a health issue has progressed far enough that it requires more drastic measures.

On one hand, students who feel respected reciprocate in kind, treating the people and things with which they share the space with respect. On the other, when conflicts arise, which they inevitably will, the practices used to build the culture form a foundation of trust and communication.

Practices of Edible Education

The following is an overview of the foundation practices of our work—the most important strategies we have identified for translating our theory of edible education into a living experience for our students.

Most of these practices are not explicitly represented in the lesson plans that follow, but are nonetheless foundational to every student experience at the Edible Schoolyard Berkeley—whether during a class, a quick visit after school, or at an evening family engagement class.

Building a strong classroom culture is the foundation of all our practices. It begins with identifying how we want our students to feel while they are in our classrooms. From there, we engage specific practices to meet those goals.

How we want our students to feel:

- I can do this.
- My presence and contributions matter and are appreciated.
- I feel safe.
- I have ownership of my body and voice.
- I know how I can be successful in this space; the people here want me to succeed and will support me in doing so.

- I feel welcomed, cared for, and respected.
- I am acknowledged, I am seen, and I belong here.
- I can be myself.
- My voice and opinion matter and are respected.
- The space, people, and structures are fair to me.
- I have the ability to grow and develop my skills, knowledge, and abilities through effort and practice.
- It is okay not to know.
- When I encounter a problem, don't know something, or feel unsure, I know how to get the support I need to figure it out.

How we meet these goals:

1. INVITE STUDENTS TO SHOW UP AS THEIR FULL SELVES IN THE CLASSROOM AND LET THEM KNOW THAT THEIR PRESENCE AND CONTRIBUTIONS ARE APPRECIATED.

- Greet every student at the door as they enter the classroom.
- Interact with every student one-on-one in each class.
- Talk to students with respect and kindness.
- Meet students where they are. Help students find space and time to process whatever they are bringing into the classroom. Support them in practicing self-awareness around this need and the strategies they can use to address it.
- Foster a "culture of yes": Think twice before answering "no" to a question and see if there is a way to accommodate a student's request.
- Feature crops, recipes, tools, artwork, and other objects from many cultures in the physical space.
- "Don't yuck my yum": Don't put down or deride things that other people like. Support students to do the same.
- Avoid commenting on students' eating habits (e.g. "Wow, you just inhaled that plate!") and support students in doing the same.
- When a student says they don't want to try a food, insist on serving a very small "no thank you" portion so they have the opportunity to try it if they change their mind, but do not insist that they try it.
- Serve up food with the stated goal of fairness and ask students to help you in achieving that.
- Make a positive phone call home to share a student's successes and achievements in class.
- Appreciate the difference between intent and impact: When conflict arises, recognize that frequently the harm caused was not intended, but that lack of malice does not mean a harm caused is not real. Support students to understand the difference.
- Model curiosity by asking questions: Invite students to share stories, thoughts, or perspectives that matter to them, and listen with curiosity. Support students to do the same. When conflict or friction arises, seek to understand its cause as opposed to making assumptions. Asking questions is an excellent way to promote students' self-reflection.
- Have fun with the students—learning should be pleasurable!

2. SUPPORT EVERY STUDENT TO SUCCEED WITH CLEAR, CONSISTENT EXPECTATIONS, EXPLICIT INVITATIONS TO ENGAGE, AND NUMEROUS OPPORTUNITIES FOR SUCCESS.

- Explicitly name and explain your expectations for student participation, and vary participation protocols—communication norms vary by culture and background. Not every student will have the same assumptions or comfort level with participation protocols often used in classrooms (e.g. one voice, calling on raised hands). Explicitly naming and explaining your expectations helps students to understand how to be successful in the space. Varying participation protocols can create access and promote buy-in for all students.
- Interrupt and explicitly name harmful or unacceptable behavior. Describe clearly what you are seeing and why it is not okay. Base your observations in firsthand experience and use "I"

language to root your observations in a shared experience.

- Eliminate barriers to participation by providing gloves, work boots, aprons, kneepads, and ponchos to students in garden classes and aprons and latex gloves to students in kitchen classes. For students anxious about keeping their hands, shoes, or clothes clean and dry, protective gear gives them the opportunity to participate without having to sacrifice this priority. Similarly, though we ask all students in the kitchen to wear aprons, if this acts as a deal breaker for any student, we never force them to.
- Celebrate and share the unique strengths of each of your students and support students to do the same. Provide opportunities for students to engage in collaborative work in a variety of ways (e.g. group discussion or brainstorm, or independent research with a group report out afterwards). Have students reflect on the contributions of each group member.
- Invest in building relationships with your students. Take the time to learn about your students' needs and experiences at home and at school. Individually and organizationally, explore the impact of culture, identity, power, and privilege on the schooling experience. Build your skills in multicultural conversation and develop your teaching practices to ensure access for all students, especially those historically underserved by the educational system.
- Access students' prior knowledge and experience. Soliciting students' existing perceptions of and interactions with your program's content can validate their experiences, teach you more about their lives, and establish common interests and knowledge. Providing opportunities for students to share their opinions and stories sends a message that your program cares to hear them, which is a powerful tool in building student buy-in and engagement.
- Build academic language through "Structured Student Talk Time." Display questions—along with frames for possible responses—on clipboards or whiteboards to allow all students to access and practice using academic language. Sentence frames can be easily customized to support a variety of conversations. ("One method of conserving water is ____. I believe it is effective because ____.")
- Collaborate with the people at your school who are already working to support the students facing the greatest challenges at school (e.g. equity team, counselors, English-language development teachers, or the special education department).

3. MODEL AND ENCOURAGE A BELIEF THAT INTELLIGENCE AND ABILITIES CAN GROW THROUGH EFFORT.

This "growth mind-set" contrasts with a "fixed mind-set" that frames qualities like intelligence and talent as fixed traits that cannot be changed and that alone guarantee (or hinder) success.

- Engage students in challenging material and provide them with frequent opportunities to see and reflect on their own growth by prompting self-reflection and sharing your own observations of their growth.
- Practice giving specific positive feedback related to what students can control (effort, strategies, attitude). E.g. "I really love the focus I'm seeing here" instead of "Wow! You did a great job! This must be so easy for you!" or "It's OK. Not everyone is a natural at this. Let's move on to something you're better at."
- Give critical feedback on areas students can control based on specific, timely, personal observations. E.g. "I noticed that during that group discussion you had a lot of speaking time and some students didn't speak at all. Did you notice that?" instead of "You talk too much and should step back so other people can get a chance to participate."
- Share stories of developing your own skills through persistence, including mistakes and "failed" attempts.

4. TEACH TO THE WHOLE CHILD AND A RANGE OF LEARNING STYLES.

- Engage the five senses.
- Make space for art and creativity.
- Use interactive and engaging visual aids and props, or leverage elements of the garden or kitchen environments as illustrative and exciting teaching tools. These visual aids spark curiosity, support content delivery, and provide students with an opportunity to analyze and interpret visual information.
- Try putting action before content. Diving into a hands-on exploration of the garden increases student buy-in, provides context for future discussions, and supports kinesthetic learners.
- Structure lessons with the "Learning Cycle" (Invitation -> Exploration -> Concept Invention -> Application -> Reflection) by starting with an invitation to engage in more open-ended exploration before introducing specific content or engaging in "meaning-making." Once students have explored and made meaning of their experiences, give them an opportunity to apply what they've learned. Finish off the lesson with a chance to reflect on their learning to help it stick.
- Reinforce key concepts using multiple media. A combination of dynamic visual aids, interesting written material, group discussions of varying sizes, and hands-on activities gives students several opportunities to grasp and engage with the topic at hand.
- If you work collaboratively with other teachers, explore how your different personalities, interests, skills, and perspectives can enrich the learning experiences you're able to offer your students.

5. ENCOURAGE STUDENTS TO TAKE OWNERSHIP OF THEIR LEARNING THROUGH INQUIRY, EXPLORATION, AND INDEPENDENCE.

- Solicit student choice. Use a process that allows students to choose their gardening or cooking job, or find other ways to incorporate student choice into lessons. Providing students the opportunity to choose establishes mutual trust and builds buy-in, and can be a way for students to develop an awareness of their own and others' interests and needs. Make space for exploration and free time as ways to investigate questions that arose during class, and develop students' ability to remain present and direct their own learning experience in times of independence. Outside of free time, structure open-ended exploration time into your lessons to engage students' curiosity and build observational skills.
- Encourage beneficial risk: Allowing students to engage with adventurous play can increase students' confidence and willingness to try new things, while also exercising their ability to reliably assess risk in their social, emotional, cognitive, and physical surroundings. We encourage our students to step out of their comfort zone academically and socially, and we also give them opportunities to physically test their boundaries with wheelbarrow rides, climbing trees, and using real tools.
- Teach students to use real tools. This sends a message that the objects in our lives are not always disposable and should be treated with care, and that we trust and expect our students to act as stewards of these communal resources. It encourages students to take ownership of the space and inspires buy-in and focus.

6. PROVIDE OPPORTUNITIES FOR STUDENTS TO COLLABORATE, LEAD, AND DEVELOP THEIR VOICES.

- Make thinking visible. When making decisions, share your thought process so that decisions are seen to be logical and reasoned. Sharing your process with students allows them to develop the higher-level thinking skills, such as awareness of self and others, that we as teachers constantly employ.

- Use discussion routines. Maximize "student talk time" during lessons while helping students to develop their academic vocabulary, evidence-based argumentation, and confidence in public speaking by using discussion protocols that students learn and become familiar with. Some of our favorites are:
  - **Walk and Talk:** Good for transitioning between spaces. Ask students to form two lines and discuss, as they walk, a topic with the person next to them. Upon arriving at the destination, give each pair the chance to share out.
  - **Think-Pair-Share:** This routine gives students time to silently reflect on a question or prompt, then discuss with a partner, and finally share out to the larger group. This is a great way to involve students who are more timid and avoid raising their hands even if they know the answer.
  - **Whip-Around:** Pose an open-ended question to students, give them a moment to consider their responses, and then whip around the circle, hearing briefly from each student.
  - **Lines of Communication:** In this activity, students form two lines facing each other. Pose a question to the students, who have an opportunity to share their answers with the person standing across from them. Direct the students in one line to rotate in one direction, thus providing every student with a new conversation partner.
  - **Poetic Devices:** We often use this protocol during tasting activities, asking students to share a simile or metaphor to describe the food they're eating. This activity can be good for any of the five senses.
- Engage in project-based learning. Whether it's building new tables for your greenhouse, designing an art installation, or developing a cooking lesson for younger students, project-based learning allows students to identify real-world problems and develop solutions. This type of learning cultivates a tremendous level of ownership by exciting and motivating students to leverage their agency as learners. Students practice communicating their ideas, designing solutions that represent the entire group's vision, and collaborating to develop the skills needed to complete their project.
- Encourage student leadership. If a student has already worked on a kitchen or garden skill, ask them to teach their peers. For routines that students complete often, like a tasting or opening circle, invite a student to give the instructions or facilitate the conversation. Encourage a wide range of students to practice their leadership skills and help students appreciate the many ways in which leadership can manifest beyond speaking in front of a group.
- Build social-emotional skills through teachable moments. As a teacher, recognize moments in which you can give feedback or guidance to help students develop their awareness of self and others, ability to make responsible decisions, and communication and relationship skills.

7. HELP STUDENTS BUILD A TOOLBOX FOR LEARNING BY PROVIDING THEM WITH OPPORTUNITIES TO DEVELOP KEY ACADEMIC, SCIENTIFIC, AND OBSERVATIONAL PRACTICES.

We see the kitchen and garden as dynamic laboratories in which students can develop the skills needed for lifelong critical thinking. We've noticed that providing students with opportunities to make careful observations, conduct investigations, and engage in critical thinking or discussions not only increases their academic skills; it also invites them to fall in love with food and the natural world.

- Use the "I notice, I wonder, it reminds me of" routine. This routine helps students develop a mind-set of curiosity and provides language tools to engage with the natural world. It also encourages students to relate nature to their own lives and share more about themselves in the process.

- Build on lessons over multiple classes/grade levels. By referencing a previous experience in the kitchen or garden, students are able to make connections, deepen their understanding, and build on skills. We use our scope and sequence document to determine how to intentionally sequence experiences and content over students' three years at King Middle School.
- Use questions to further students' thinking and prioritize the thought process over the final answer. Spark a conversation with open-ended questions that encourage students to synthesize information, draw on their experiences, brainstorm solutions to a problem, and develop their own opinions. By modeling the use of questions in academic conversations and explorations, you can help students develop their own questioning skills.
- Ask students to make a prediction/hypothesis. By pausing to invite students to think about what might happen next, we allow students to practice an important scientific skill while encouraging them to develop their own ideas (and become invested in the discussion at hand).
- Engage in arguments from evidence. After posing interesting questions and problems, help students practice sharing the reasoning behind their thoughts. You might collect and analyze data from the kitchen or garden, develop and use a model, or draw from a hands-on or lived experience. Encourage students to evaluate a variety of opinions using respectful conversation skills.

8. SPARK STUDENT INTEREST BY HIGHLIGHTING REAL-WORLD CONNECTIONS AND SHARING YOUR PASSION.

- Draw students in with a thought-provoking question or a well-chosen visual aid. Consider what your students will experience at the very beginning of a lesson (even before you speak). What are they seeing? Are they invited to explore or generate questions? How are you engaging their five senses? Creating a buzz from the start of class will build student buy-in.
- Using food as a hook. In general, students love to cook (and eat!). Consider ways you can intentionally link food to your lesson's content, so it is more than just an "add-on."
- Plan for how students will get to interact in any activity. Oftentimes the best learning builds community through fun and memorable shared experiences.
- Provide learning opportunities unique and authentic to your classroom space. If you are working outdoors, consider whether you could do the activity you are planning indoors. If so, keep brainstorming to find an activity that helps students learn content in a way that meets the garden's needs and leverages the special elements of our garden space. If you are working in a kitchen, make use of everything the space and tools have to offer.
- Share your own passions, interests, or personal anecdotes to engage students and inspire them to care about lesson content. After sharing about yourself, ask them to share something about themselves.
- Connect the activity to students' lives and highlight real-world connections. Help students realize the "So what?" by sharing how the content you're learning impacts their lives or shows up in the world at large; link your lessons to current events in your community; bring personal stories about farming, environmental stewardship, and working in the food system.

Curriculum Development

Even after 20 years, we are always in a process of reimagining, updating, and creating anew our curriculum.

Ongoing engagement with our lessons helps us to stay energized and excited about what we teach, and keeps our students' classroom experiences feeling relevant and important. Continuing to revise our curriculum also engages us in the critically important, on-going dialogue with our central goal of cultivating equity in our classrooms and communities. As the conversations around equity in society as a whole evolve, we are always working to reflect that in our curriculum.

Whenever we develop or edit a lesson, it happens in two parts. First we'll create a draft of the lesson in its entirety. This may happen all at once, or it may happen over the course of a longer period of time; it may happen from scratch, or through editing an existing lesson; it may be collaborative or combine independent thinking and group conversation.

Once we have a draft, we review it as a teaching team. While reviewing, we take a fine-tooth comb to every aspect of the lesson—the write-up, the teaching materials, activities, food, recipes, etc.—to make sure it reaches our goals for student learning and student experience. We look to see the lesson is doing what we want it to do (e.g. help students to better understand the greenhouse effect), and not inadvertently doing what we don't want it to do (e.g. make students feel overwhelmed and powerless over the scary impacts of climate change). After this review, we circle back to the lesson draft and revise it to address any issues identified in the review. This cycle of revision may happen once or many times.

When we feel a lesson is ready to teach, we try it out. Inevitably, this surfaces new considerations. We address what we can right away and record what we can't address immediately for the following year. Many of these considerations are captured in the "Teaching Notes" sections of our lesson write-ups. Overall, we aim to create curriculum as dynamic as the content we teach and the spaces we teach in. Below, we've outlined a rough guide to our curriculum development process. Our goal is to provide you with suggestions and tools that you may draw from to use in your own program, and also to provide context for the development of each of the lessons that follow.

Lesson Development

1. IDENTIFY AND DEFINE LESSON GOALS

The first step when we create new a lesson or edit an existing one is to define the lesson's overarching goals. These goals may be skill-based (e.g. to develop students' knife skills, or to help students practice working as a team), they may be thematic (i.e. to engage students on the intersection of food choices and environmental issues, or to explore agricultural techniques used by historical civilizations of the Americas), they may be related to how we work (e.g. to support our upcoming plant sale, or to increase buy-in and facilitate collaboration with math teachers), or they may be a combination of the three. Some of our lessons develop from one major goal, but most begin with two or three.

In almost every case, lesson goals arise from where the lesson is in the overall scope and sequence of

our students' experience in the kitchen and garden classrooms and their academic classrooms. This often means collaborating with academic classroom teachers to generate lesson goals that coincide with or support students' academic learning on specific topics or themes—we seek their input wherever possible because it helps inform how we can best support the overall learning of our students. Every lesson also has at least one goal stemming from the arc of students' development of knowledge, skills, and behaviors unique to our kitchen and garden classrooms. For example, whenever we build or revise a seventh-grade lesson for our kitchen classroom, we do so with an eye towards the final seventh-grade lesson of the year: Iron Chef. In the Iron Chef challenge, table groups work together—without adult assistance—to plan and prepare a meal based on a set of surprise ingredients. This lesson demands a high level of collaboration and independence from the students, as well as a mastery of basic cooking skills and techniques. In order to prepare students to enjoy and feel successful with this challenge, we specifically design the seventh-grade lessons leading up to Iron Chef to support their development of these skills. This same thinking is applied for all of our lessons, both in the kitchen and in the garden.

In addition to supporting a more cohesive student experience, defining these broad lesson goals is crucial to facilitating successful and efficient collaborative lesson development. They focus our efforts as we move forward and allow us to be flexible in designing the specifics of our collaboration process—with the lesson goals as touchstones, we may delegate much of the lesson design process to just one or two people or choose to craft in group discussion, infinitely more efficient and creative with everyone on the same page.

2. DEVELOP STUDENT LEARNING OBJECTIVES

Student learning objectives translate lesson goals into student experience: What do you want your students to get out of this lesson? What knowledge, skills, behaviors, or other learning should they have leaving your classroom that they didn't have when they arrived? Learning objectives should be specific, attainable, measurable, and important. Just as our overarching goals for a lesson often look quite different between lessons - while one lesson may be built to facilitate student learning on the scientific process, another may originate with a desire to strengthen collaboration between the art department and the kitchen classroom - student learning objectives vary greatly across our lessons. Sometimes learning objectives may be developed entirely from the lesson goals. Often, however, they are refined and made more specific in conjunction with the next step in our process: choosing the food, crop, or activity that the students will engage with.

3. CONSIDER YOUR FOOD, CROP, OR ACTIVITY

With the overarching goals and specific learning objectives defined, our next step is to dive into the food, crop, or activity: What will the students do or experience to reach the learning objectives and for the lesson goals to be met?

In the kitchen, this means choosing a recipe. Some key considerations when choosing what to cook with students are:

What is in season? Ideally, every recipe we make includes at least one ingredient that comes directly out of our garden.

How much time do we have? The most exciting, delicious recipe is no fun if students feel rushed making it. Sometimes, tricks like having boiling water ready when students arrive, pre-cooking or partially cooking certain ingredients, or having students follow a "pay it forward" model where classes prepare foods to be used or enjoyed by following classes can help buy us more time.

Will students like the food? We want everything we

cook in the kitchen to be delicious. We often choose foods that many students are already familiar with to maximize student buy-in.

What foods are important to our students? All students should feel welcome, seen, and represented in our space. We cook foods from a variety of cultures, and frequently ask students what foods they eat at home and which foods are important to them. When creating a new lesson, we actively seek input and feedback from students and community members who identify with that food.

What cooking skills do we want students to learn or practice? If our aim is for students to develop their knife skills, just making pancakes is not the best choice to serve that goal. Add supremed citrus and thinly sliced candied citrus peels to that lesson, and you may have the ideal food.

What themes or topics do we want to explore? If we're building a lesson around the spread of spices from India along the Silk Road to support the sixth-grade history curriculum, we'll choose a recipe that includes the specific Indian spices involved in this historical trade.

What goals do we have for student behaviors and habits of work? If we're aiming to increase students' perseverance and focus, we may choose a recipe that requires a lot of specific, careful knife work like vegetarian sushi, or one that has a narrow margin of error and requires high levels of attention to technique like a rolled omelette.

How many students will we have? What is the adult-to-student ratio? The greater the number of students and the fewer adults, the more important it is to choose a recipe that students can be successful at relatively independently.

Will there be enough meaningful jobs? We want all students to be engaged for the full time that they are with us, whether it be preparing the recipe, setting the table, harvesting herbs for our water, or taking a poll of which hot sauce the table group would prefer to have with the meal.

What equipment and tools do we have? Which recipes best meet the constraints or qualities of our space? We think about work flow when choosing a recipe or multiple recipes. If we already know a lesson includes one dish that will be cooked at the stove, maybe we'll add a recipe that will be eaten raw, or one to be cooked in the oven, to best use our resources and avoid overcrowding any one area of the kitchen.

Will students make the recipe at home? We choose recipes that students can replicate at home with basic equipment and tools and affordable, easily sourced ingredients. When we use special equipment in the kitchen, we suggest alternatives (such as using a glass or bottle as a rolling pin), and always provide copies of the recipes for students to take home.

Will preparing the recipe be fun? We have never made French onion soup and probably never will, because what kid wants to spend a 90-minute cooking class crying?

WHAT WILL THE STUDENTS DO OR EXPERIENCE TO REACH THE LEARNING OBJECTIVES AND FOR THE LESSON GOALS TO BE MET?

In the garden, this means determining the garden jobs. Some key considerations when choosing garden jobs are:

What does the garden need? Just as we have our students work with real tools, we always want the work our students do in the garden to be authentic to the true needs of the space. Working on real gardening jobs allows students to work toward mastering gardening skills that will continue to serve them after graduating from our program; it teaches students through experience how to

identify and recognize the needs of a garden and how to meet those needs; and it develops in students a sense of self-efficacy and ownership over the space, recognizing that their actions are directly reflected in the growth and health of the garden.

How much time do we have? For many of our students, learning to appreciate the rewards of the work required to maintain and care for a garden is already a major lesson in patience. Whenever possible, we try to have students work on jobs that can come to some form of conclusion or culmination in the time we have to work. We try to provide opportunities for students to see the results of their efforts over the short and long term.

What gardening skills do we want students to learn or practice? Our goal is that every student will graduate from our program with the basic knowledge and experience required to successfully grow food. In most lessons, we include some variation of four gardening jobs: propagate, cultivate, harvest, and compost. Over the course of a student's three years in our program, we intentionally build opportunities for them to develop capacity in these areas.

What themes or topics do we want to explore? We collaborate closely with King Middle School's science teachers and use the Next Generation Science Standards (NGSS) as an invaluable resource to translate academic ideas or concepts into hands-on garden-based experiences. We truly believe that anything can successfully be taught in a garden classroom—collaborating with a diverse group of stakeholders can be key in identifying rich connections.

Can many hands complete the task? We want our students to be meaningfully engaged for the entire work period. If one task won't be enough but is something we feel strongly that we'd like our students to have the opportunity to do or that the garden urgently needs, we'll often have that group spend half the period completing the task and the other half preparing a tasting, working on another job, or in free exploration time.

How many students will we have? What is the adult-to-student ratio? The greater the number of students and the fewer adults, the more important it is to choose a garden job that students can be successful at relatively independently.

Will it make best use of the space? Whenever we're making a new lesson, we always ask ourselves, "Could this same lesson happen inside?" If the answer is "yes," we know the lesson isn't there yet. The most valuable experiential learning happens in the garden when activities are authentic to the richness and uniqueness the space has to offer. We also always look to have a variety of tasks that can be completed in different areas of the garden. As much as possible, we aim to distribute working groups throughout the garden to avoid cramping one area.

Do the tasks appeal to the diverse interests and energy levels of our students? In every garden class we try to present a variety of jobs that appeal to all students. For example, students with a lot of energy will thrive in more physical jobs, while artistic students love a job in which they can spend the working period painting colorful signs for the garden beds.

4. CRYSTALLIZE CONNECTIONS

What teaching practices, structures, or strategies will we use to crystallize the connections between the food, crop, or activity and the specific learning objectives? Defining a learning objective and choosing a food that relates to that objective doesn't necessarily set students up to meet the learning objective. In this step, we get specific about how the students will relate with the food, crop, or activity in a way that facilitates the learning we want to happen. This step is especially important because so much of the learning that occurs in our classrooms is experiential. Being intentional about how we frame and set up student experience in our lessons means

the difference between, for example, students having a great time propagating starts in the greenhouse and also learning that climate change is causing a rise in global temperatures versus students being able to describe how the way a greenhouse traps heat mirrors the role of the ozone layer in regulating global temperatures.

WHAT TEACHING PRACTICES, STRUCTURES, OR STRATEGIES WILL WE USE TO CRYSTALLIZE THE CONNECTIONS BETWEEN THE FOOD, CROP, OR ACTIVITY AND THE SPECIFIC LEARNING OBJECTIVES?

Practices, structures, and strategies we often use to intentionally make these connections include:

- Chef Meetings/Opening Circles
- Small-group check-ins
- Visual aids or other visual materials
- Written recipes or other procedures
- Breakout activities, labs, or other activity formats
- Discussions and structured reflections (large group, small group, facilitated, open, structured student talk, etc.)
- Lesson props or materials, such as interactive cards or thought-provoking books
- Closing Circles
- Exit tickets

Lesson Revision

After we draft a lesson, the next step is to review it. Just like our initial draft development process, lesson draft revision is always collaborative. The specifics of this collaboration vary from lesson to lesson. Most frequently, the main author(s) of a lesson distributes the draft to a committee of reviewers—generally the other kitchen teachers for a kitchen lesson and other garden teachers for a garden lesson, but sometimes both, as well as academic classroom teachers, and sometimes community members with experience or expertise that relates to the lesson. We make it a point to seek feedback from as diverse a collection of perspectives as possible because we recognize that this is one of the surest ways to succeed in always improving at our work and in creating curriculum that is meaningful to all of our students.

One tool we often use to organize the lesson revision process is the "Curriculum Discussion Tool," included below. We initially developed this tool as a framework to support us in developing our curriculum for social justice. Explicitly identifying ways that a lesson can work to cultivate social justice and dismantle oppressive systems (section III on the Curriculum Discussion Tool) allows us to better integrate those considerations into our lesson development process. Similarly, enumerating the variety of ways our classrooms can uniquely support students' academic skills allows us to be more intentional in how our lessons support the academic lives of our students. At its core, the Curriculum Discussion Tool is useful because it holds space for a variety of considerations that we have decided as an organization to prioritize but don't always get right the first time we draft a lesson.

We don't expect to hit every consideration on the tool in any single lesson. In fact, it's generally much better that we don't. When reviewing a lesson, we absolutely look to see that our goals for student experience, our practical considerations, and our learning goals and objectives are met. In terms of "Anti-Oppression Curriculum" and "Building Academic Skills," on the other hand, it is often much better for a lesson to very robustly hit one or two marks—trying for any more than that tends to clutter and dilute a lesson's impact. Instead, we want our curriculum overall, as a collection of lessons, to reflect the priorities listed on the discussion tool.

After individuals have read through a lesson draft and filled out the Curriculum Discussion Tool based on their reading, author(s) and reviewers meet to discuss.

The Edible Schoolyard Curriculum Discussion Tool

LESSON NAME:

LESSON GOALS:

STUDENT LEARNING OBJECTIVES:

MATERIAL AND CONTENT FOR REVIEW

- ☑ Chef Meeting/Opening Circle (content, language, delivery)
- ☑ Small-group check-ins
- ☑ Visual aids or other visual materials (content, language, appearance)
- ☑ Written recipes or procedures (content, language, appearance)
- ☑ Activities (Wha t are the students doing? What are the teachers doing?)
- ☑ Food/crops
- ☑ Other: _____

Lesson Review

Does this lesson do what we want it to do? What does this lesson do? Reflect on all lesson materials and content. Rate considerations in each category below based on how well the lesson does it:

YS **Yes** (strong)

YW **Yes** (weak)

N **No**

P **Potentially!** Not yet, but could be developed

STUDENT EXPERIENCE

____ How might different aspects of student identity impact a student's experience of this lesson? Is there anything in this lesson that could alienate, hurt, or cause a student to feel unwelcome on the basis of any aspect of their identity? Consider race, gender, class, family structure, religion, ability, sexuality, body type, other, etc.

____ Is FUN

LESSON GOALS AND LEARNING OBJECTIVES

____ Supports the stated lesson goals

____ Meets the stated student learning objectives

ANTI-OPPRESSION CURRICULUM

____ Provides opportunities for students to learn about self and identity

____ Explores how identity differently impacts various groups of people

____ Presents opportunities for critical thinking—especially about identity and access to resources

____ Helps to shift assumptions and dominant stories about what is normal (re: race, gender, class, family structure, religion, ability, sexuality, body type, etc.)

____ Provides opportunities for students to think critically about the narratives told about food and morality in our culture (e.g. good vs. healthy vs. unhealthy)

____ Provides historical context for present-day inequities

____ Integrates constructive ideas from students or community

____ Incorporates different learning modalities (visuals, body-based learning, etc.)

____ Incorporates visual aids that are representative of different cultures and experiences

____ Provides opportunities to take action on issues that affect students and their communities

____ Provides opportunities for student talk time

BUILDING ACADEMIC SKILLS

____ Provides opportunities for students to develop their skills as learners

- By practicing scientific and inquiry thinking (observation, hypothesis, testing theories, investigating questions, etc.)
- Through integrating information from a variety of sources (firsthand observations, personal experience, direct instruction, written text, visual aids, existing knowledge, etc.)
- Through opportunities for metacognition, self-assessment, and process assessment

____ Provides opportunities to practice systems thinking (drawing connections, recognizing intersections, cause and effect, thinking on a variety of scales)

- By drawing connections between lessons learned in kitchen and garden classrooms and the larger world
- By observing and articulating large-world phenomena/big ideas playing out in kitchen and garden classroom “laboratories”

____ Provides opportunities for students to develop their discussion skills

- By articulating their own ideas in a variety of formats with a variety of participation protocols
- Through actively listening to the ideas of others

____ Provides opportunities for students to develop their literacy

- Through reading recipes or other process texts
- Through language and vocabulary acquisition

____ Provides opportunities for students to develop their identity as a successful student and sense of self-efficacy around learning

____ Provides students the opportunities to build positive relationships with people who can support their academic success

____ Integrates information or content that connects to their academic classrooms

____ Connects to NGSS, Common Core, CA State History-Social Studies, or other standards

Practical Considerations

____ Practical in the time given

____ Practical in the space

____ Practical with the number of students and student-to-adult ratio

Comments:

Reflection Cards

We use Reflection Cards with our students to prompt reflection and self-evaluation on skills, norms, and behaviors that are important in the kitchen and garden classrooms.

The goals of this resource are two-fold:

- First, providing students with opportunities to reflect and evaluate themselves on areas specific to our classrooms supports their continual development and success in the kitchen and garden.
- Second, self-reflection and evaluation are important skills with significant benefits that we believe can be developed through practice.

We believe that much of the most valuable learning in an experiential classroom - and in life - happens through the process of reflection and evaluation. The Reflection Cards are designed to support and develop these life skills.

In the Kitchen

We use the Reflection Cards in different ways depending on the lesson, the group of students,and our goals for student learning. Sometimes we introduce specific Reflection Cards during a Chef Meeting or small group circle as a focus for that lesson. Other times we may ask students to select a card for the group to focus on during the lesson. Either way, we prompt students to generate a brief explanation of what the card means, or describe examples of how it looks in the context of the kitchen. At the end of class we lead a brief group reflection and discussion on how that skill was practiced or not during class that day.

Other times we may select a Reflection Card as a focus at the end of class. For example, perhaps we noticed that many of our students were forgetting to clean up their stations as they went, instead leaving all the cleaning to the last second. During mealtime or right before eating, we may pull the "Clean as you go" card from the deck and prompt the group to reflect on how they practiced that skill. We find that prompting students to reflect on their actions and behavior tends to result in far more thoughtful and meaningful learning than when we as teachers tell students that they haven't done something as well as they could. We sometimes even use Reflection Cards in one-on-one interactions as a tool for prompting individual students to reflect on specific skills or behaviors.

The Reflection Cards play a role in students' experience throughout their three years in our program. They are always available for students to look at in the toolboxes at each table, and we have large versions of the Reflection Cards hanging in the kitchen as decorations to serve as a reference and reminder of expectations and goals for learning.

In the Garden

After we break out into groups and leave the Ramada one of the first things we do with our group is a ‘Small Circle Check-in’. It’s here that we have each student answer a “check-in” question which are provocative, fun and may not have anything to do with gardening. These questions can also relate to the lesson or theme of the day. Circling up as a small group is a great way to define yourselves as a team for the rest of class and is also a perfect opportunity to present the reflection cards.

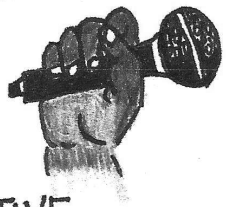
- Present the cards and ask a student to look/read through the set of cards and choose one that speaks to them as something we will watch out for during garden class today.
- After every student has had the opportunity to engage in the check in question return to that student to find out what reflection card they have chosen and ask them to read it out loud to the group.
- Explain that we’re going to circle up briefly at the end of class to reflect on how we did as a group in relation to the card chosen. Example; If the student had chosen the ‘Justice’ card we would reflect on accountability, sharing and fairness.
- At the end of class engage students in a quick whip around activity where they share out how they saw (or didn’t see) accountability, sharing or fairness show up for them during class that day.

We believe that much of the most valuable learning in an experiential classroom - and in life - happens through the process of reflection and evaluation. The Reflection Cards are designed to support and develop these life skills.

BEAUTY

- FOR US NOW
- FOR PEOPLE COMING AFTER US

FOCUS

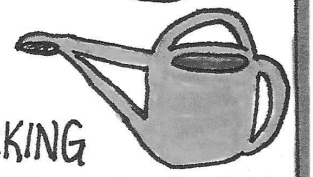


- ON TASK
- TAKING INITIATIVE
- ONE VOICE IN CIRCLE

JUSTICE

- ACCOUNTABILITY
- SHARING, FAIRNESS

WASTE

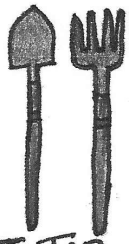


- TIME
- WATER
- ASK BEFORE PICKING

PEOPLE

- FLEXIBILITY & MATURITY
- INCLUSIVITY
- RESPECT & KINDNESS

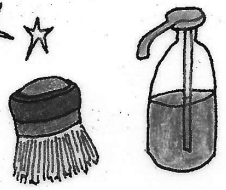
TOOLS



- SAFE USE
- CARE
- RIGHT TOOL for the RIGHT JOB

CLEAN AS YOU GO

- WASH
- DRY
- PUT BACK

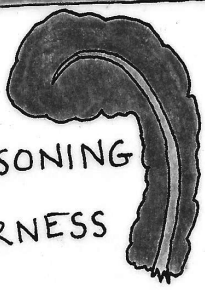


BEAUTY

- FOR US NOW
- FOR PEOPLE COMING AFTER US

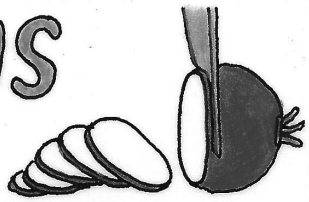
FOOD

- COOKING, SEASONING
- SHARING, FAIRNESS



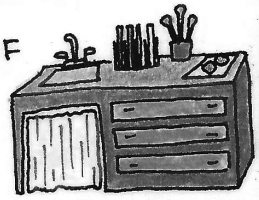
FOCUS

- ON TASK
- TAKING INITIATIVE



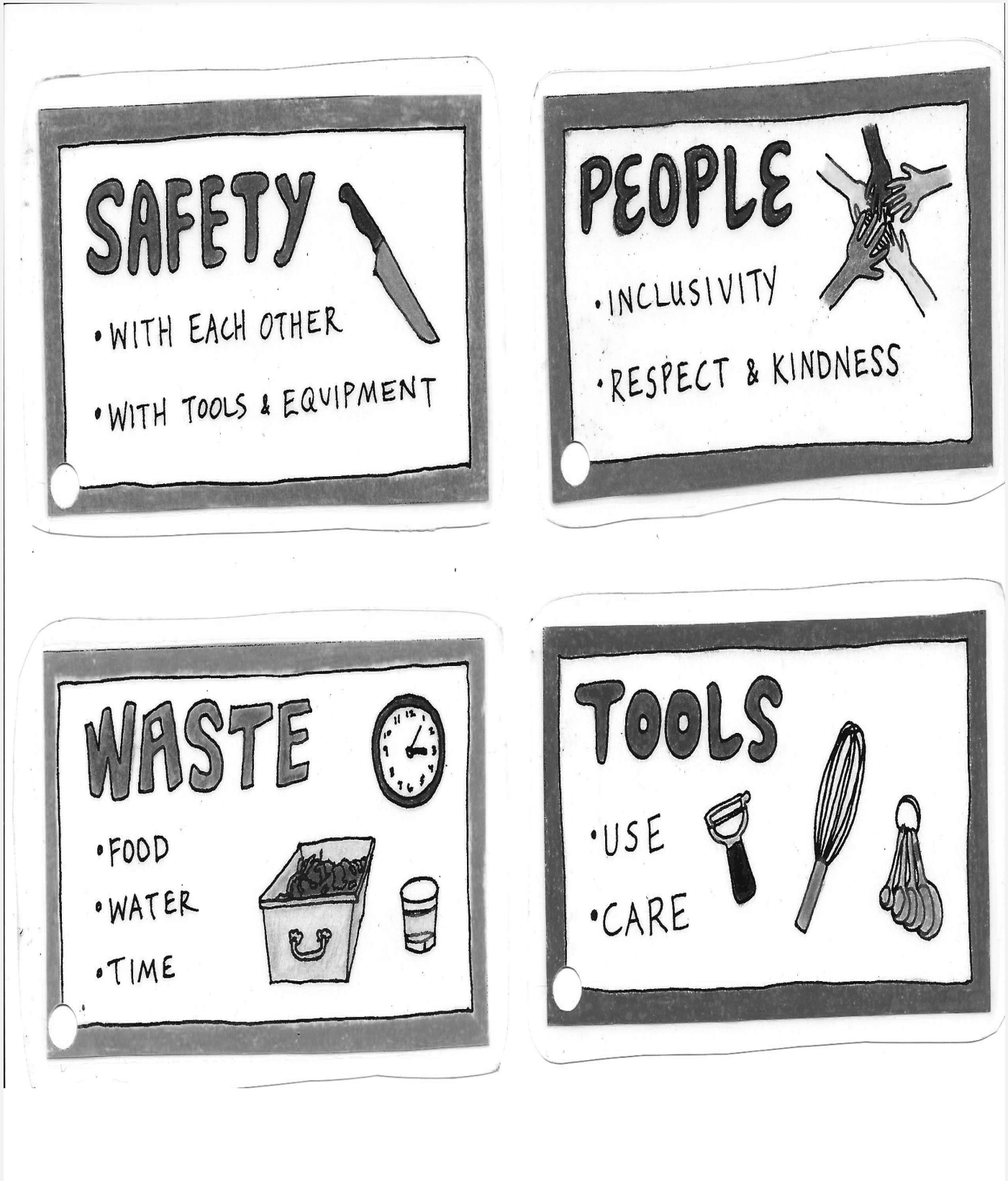
KITCHEN CLASSROOM

- KNOWLEDGE OF
- RESPECT OF



HYGIENE

- HANDWASHING
- TASTING


SAFETY
•WITH EACH OTHER
•WITH TOOLS & EQUIPMENT
PEOPLE
•INCLUSIVITY
•RESPECT & KINDNESS
WASTE
•FOOD
•WATER
•TIME
TOOLS
•USE
•CARE

RESPECT IN THE GARDEN VISUAL AID & INTRODUCTION: EDIBLESCHOOLYARD.ORG/RESPECT

Edible Schoolyard Garden Culture

Summary

The rituals and routines that students and teachers follow create a responsive garden classroom environment that fosters access for all students.

Student Routines

In the garden, we have established the following routines so that students know what to do when they come to garden class. Students:

- Arrive quietly to the Ramada and take a seat, ready for opening circle
- Can reference the job board for the lesson of the day, garden jobs, and the closing circle activity.
- Hear brief descriptions of each garden job on the board from garden teachers.
- Choose the right tool for the right job from the tool shed.
- Know the ring of the cowbell signifies that they should:
    - Clean and put back tools in the tool shed (tools with red tape outside, tools with yellow tape inside).
    - Head back to the Ramada for closing circle.
- Participate in **tastings**:
    - Wait until everyone is served.
    - 6th grade: Share their name and a description of the tasting based on the five senses.
    - 7th and 8th grade: Share his/her name and create a simile about the tasting using the five senses.

Garden Teacher Routines

As garden teachers, we have established a set of routines for every garden class so that students know what to expect. Garden teachers:

- Write garden jobs and/or the lesson of the day on the job board prior to class and hang the job board in the Ramada for all to see.
- Welcome students as they arrive to the Ramada.
- Share leadership in facilitating opening and closing circles.
- Ring the cowbell to signify clean-up and closing circle.
- Check-in with classroom teachers after every garden class.

Student Buy-In

With the following practices, we aim to instill a sense of ownership and love for the garden in each student:

- Engage the senses!
    - Woo students by enjoying food from the garden with activities such as cooking papas fritas and wood-fired beets as well as pressing apple cider.
    - Grow many crops for foraging in multiple seasons and facilitate picking.

      Some examples include: Strawberries, mulberries, loquats, raspberries, celery ground cherries, figs, pineapple guavas, sorrel, sugar snap peas, carrots
    - Harvest-to-Home giveaway: Before the last bell of the day rings, set up a table in front of the school with harvested crops from the garden and grocery bags.

      Students are able to fill their bags with produce to take home. We hold our Harvest-to-Home giveaway the day before Thanksgiving break).
- Lesson and crop timing
    - Hold garden classes during different times of the year to allow students to experience seasonality and the progression of fruits and vegetables from seed to table.
    - Coordinate crop planning with kitchen program.
        - Facilitate students planting and/or harvesting ingredients for their kitchen classes.
        - Plan ahead by timing the planting of crops that are used in kitchen lessons.
- Students use real tools for real jobs authentic to the needs of the garden.
- Descriptions from each garden teacher help students choose the working group they would like to participate in.
- Ring the cowbell to signify clean-up and closing circle.
- Check-in with classroom teachers after every garden class.

Encouraging Success

In the garden we empower students to make decisions and encourage them to be their best selves.

GARDEN TEACHERS:

- Set high and clear expectations with the “Respect in the Garden” poster.
- Recognize the spectrum of LGBTQ/gender identities and understand the importance of creating a safe and inclusive classroom setting.
- Eliminate barriers to participation by providing protective gear like boots, gloves, aprons, knee-pads, and ponchos to help everyone feel comfortable and prepared.

Garden Culture: Encouraging Success (continued)

GARDEN TEACHERS:

- Provide diverse garden jobs that appeal to every student. (For example: sign painting for artsy students, mulching for high-energy students, and propagation for mellow students)
- Break up the class into small working groups that are spread out in the garden.
- Encourage students to pick the garden job that appeals to him or her most with open-mindedness.
- Maintain a level of flexibility and adaptability based on the needs of the students. Whenever possible, say "Yes".
- Encourage appropriate play such as wheelbarrow rides, with the understanding that a certain amount of risk in play is beneficial.
- Reward students with more responsibility and give students an empowering task when they seem to be off task.
- Offer precise praise as much as possible.
- Ask for student input whenever possible.

We Are Committed To Developing Our Cultural Humility

Individually and organizationally, we explore the impact of culture and identity on the schooling experience, examine the influence of race, power, and privilege on the educational process, and seek culturally responsive pedagogy and practices to ensure access for all students, especially those historically undeserved by the educational system. We aim to create physical and emotional spaces that reflect and celebrate the diversity of our community.

- Purposefully utilizing activities that affirm and validate the backgrounds, cultures, languages, and experiences of the students
- Providing protocols for discussion and participation that facilitate the validation and affirmation of cultural behaviours in the garden classroom
- Engaging students in activities which tap into their personal learning styles

Conflict Resolution

The above strategies of Encouraging Success are a proactive approach to preventing conflict and allowing students to show up as their best selves. However, when conflict does arise we use the principles of Restorative Justice to find resolution.

Restorative Questions: To help those affected

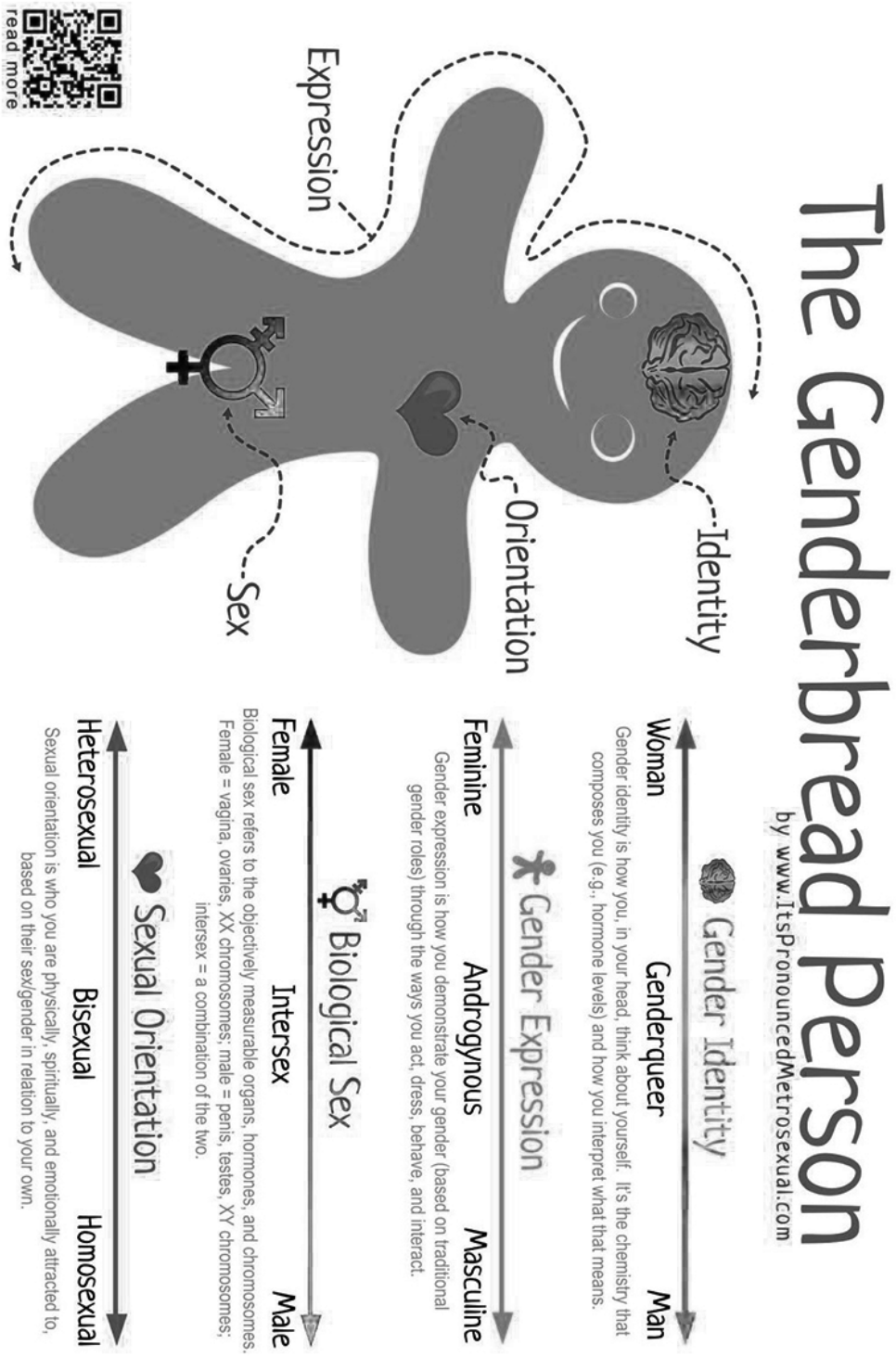
- What did you think when you realized what had happened?
- What impact has this incident had on you and others?
- What has been the hardest thing for you?
- What do you think needs to happen to make things right?

Restorative Questions: To respond to challenging behavior

- What happened?
- What were you thinking/feeling at the time?
- What have you thought about since?
- Who has been affected by what you have done?
- In what way have they been affected?
- What do you think you need to do to make things right?

Safe and Inclusive Spaces

Gender isn't binary. It's not either/or. In many cases it's both/and. As educators we believe it's our responsibility to ensure a safe and inclusive space for all students. We use the below graphic, "Genderbread Person", as a quick guide to understanding gender.



A Typical Garden Class

We have integrated rituals and routines into every class so that students know what to expect and what is expected of them when they arrive to the garden.

A typical garden class with sixth graders at the Edible Schoolyard is 86 minutes (1 hour and 26 minutes) and is divided into three main parts: Opening Circle, In the Field (work time), and Closing Circle.

At the beginning of class, students arrive to the garden and gather in the Ramada for the Opening Circle.

OPENING CIRCLE (5-8 MINUTES)

We use the opening circle to welcome students and frame the garden class. Garden teachers rotate the role of facilitating circle.

- Introduce the day's activity or lesson:
  - Focus attention to the job board and model team-teaching.
  - From their seat in the circle, each garden teacher gives a brief description of the garden job they will be teaching.
  - Describing garden jobs inspires student buy-in by allowing students to make an i informed choice for the garden job that interests them the most.
  - Introduce the closing circle activity so that students are prepared upon returning to circle at the end of class.
  - Divide into working groups.

IN THE FIELD (40-60 MINUTES)

After Opening Circle, students break up into three or four working groups. Each group has an average of 6-10 students and one garden teacher.

- Working groups walk from the Ramada to their job site.
- At the job site: ask each student to answer the same "check-in" question.
  - Check-in questions should be provocative and fun and may not have anything to do with gardening.
  - This is an excellent time to introduce specific inquiry questions or other frames that help to connect the garden activity to other lesson themes or content.
- Review the garden job:
  - Break down the steps to executing the garden job and have students identify the necessary tools before going to tool shed.
  - Break down the steps to executing the garden job and have students identify the necessary tools before going to tool shed.
- Get the necessary tools and gear from the tool shed:
  - We aim to cultivate a sense of independence and ownership with our students over the garden space.
  - Students are responsible (with support, if necessary) to identify what tools they need and get them from the tool shed.

- We rarely have tools set out for them at the beginning of class.
- This is also the opportunity for students to grab any gloves, work boots, aprons, knee pads, and ponchos that they wish to use.
    - We make this type of protective gear available to all students for every lesson to eliminate barriers to participation—we never want a student to feel as if they have to sacrifice the cleanliness or dryness of their shoes or clothes in order to participate in our class if maintaining these things is a priority for them.
- Work together on the garden job. **For more information about garden jobs, visit edibleschooyard.org/gardenjobs.**
    - Garden jobs are designed to help students develop cross-cutting concepts and practices every time they visit the garden
- Visit a lab or breakout session.
    - Many of our lessons that focus on specific scientific concepts include a lab or breakout session that work groups rotate through during the work period. See examples: *edibleschoolyard.org/labs*
- Foraging breaks and exploration time:
    - We love to include impromptu foraging breaks and free exploration time both during and after our garden job work time whenever time allows.
    - We grow a variety of crops that ripen at different times of year and are easy and delicious to enjoy straight from the plant.
        - Some of our students' favorites include mulberries, loquats, raspberries, ground cherries, figs, pineapple guavas, sorrel, sugar snap peas, carrots, and celery
    - We encourage appropriate play such as wheelbarrow rides, with the understanding that a certain amount of risk in play is beneficial.
- Clean and put tools away:
    - Just as important as knowing which tools to use and how to use them are knowing how to properly care for them.
    - From their first time in the garden, students learn how to clean shovels and forks off in the buckets of mixed sand and linseed oil next to the tool shed.
    - At the end of the working period, teachers ring a cowbell to signal to students that it is time to finish cleaning up and gather back at the Ramada for the Closing Circle.

CLOSING CIRCLE (10-15 MINUTES)

We use closing circles in the garden as a time for students to share with the other working groups what they worked on, reflect on their learning or experience, and often enjoy some fresh food from the garden in a tasting.

- **Tastings:** Tastings are the most common closing circle activity. Each student shares his/her name and, dependent on grade level, provides either an observation or a simile based on his/her tasting. .
    - Sixth grade: Students draw on their five senses to make an observation about the fruit or vegetable that they tasted (e.g., "My name is _____ and my apple tasted sweet").
    - Seventh and eighth grade: Students draw on their five senses to create a simile about the tasting (e.g., "My name is _____ and my apple tasted sweet like honey").
- **Report Backs:** In a Report Back, one or more representatives from each working group shares a description of their garden job, including any progress they made during the period and how the garden job contributes to the garden at large (e.g., "We finished cultivating the bed and it is ready to plant the cilantro starts from the greenhouse").

Edible Schoolyard Garden Immersion Week

Summary

The Edible Schoolyard Immersion week was developed in 2015 when King Middle School adopted a new seventh- and eighth-grade class schedule, which changed our typical weekly layout of how often and for how long we could see students in the garden. In order to maximize our time with students, we needed to be flexible, so we piloted a new structure of seeing the students every day for a week, rather than once a week over a three-to-eight-week period.

- The Edible Schoolyard Garden Immersion week was developed so that each science class from the seventh and eighth grade could have a full week of daily garden programming.
  - The seventh-grade classes receive two weeks of immersion, one in each semester.
  - The eighth-grade classes receive one week in the spring rotation.
- Prior to their garden week, students are presented with track descriptions in their classroom and are asked to rank their choices from most to least desire.
- The track groups work with an individual garden teacher for the duration of the immersion week, creating and achieving their own group goals.

TRACK DESCRIPTIONS

Each garden teacher creates a track based on their interests and specialization. Tracks also incorporate the needs of the garden for that season.

- In some cases, tracks have an overarching theme for the week, where each track makes an attempt to include activities that relate to the theme.
  - The overarching theme helps to connect the students' garden experience to academic standards.
  - In the first rotation for the seventh graders, our theme was ecosystems.
- Immersion weeks are also an excellent opportunity to engage in project-based learning—many of our tracks culminate in a tangible goal.

VOTING PROCESS

We use a voting process to give students choice and flexibility. It also helps achieve student buy-in while setting up the groups for success. Here is an example of a voting ballot we used for a seventh-grade immersion:

Name: _____ **Teacher:** _____ **Period:**___

After each option below, please circle if it is your 1st, 2nd, 3rd, or 4th choice.

(You can only have one 1st choice, one 2nd choice, etc.)

All About Chickens: (with Ms. Ashlee)	**1st**	**2nd**	**3rd**	**4th**
Climate Change: (with Mr. Geoff)	**1st**	**2nd**	**3rd**	**4th**
Gardening & Cooking: (with Mr. Jason)	**1st**	**2nd**	**3rd**	**4th**
Mini-Habitats: (with Ms. Tessa)	**1st**	**2nd**	**3rd**	**4th**

Thank you! We will do our best to place you in one of your top choices.

Sample Class Structure for Immersion Week

OPENING CIRCLE (5-8 MINUTES)

We use the opening circle to welcome the students and frame the class. Garden teachers rotate the role of facilitator.

- Introduce the week's immersion tracks. Remind students that they voted for their tracks beforehand and the garden teachers did their best to give students their first or second choice.
- Answer questions about how the week will run, reminding students that they will not meet in their classroom for the remainder of the week, but will meet at a designated spot identified by their group leader.
- Divide into track groups.

IN THE FIELD

(MON.-WED. AVERAGE OF 45 MIN, THURS. OR FRI. 90 MIN)

After opening circle, students break up into their track groups. Each group has six to eight students and one garden teacher.

- Check-in question and review of the week and the goals.
- Meet-up spot in the garden is identified for the week.
- Each track group works on their goals and projects for the week, integrating student buy-in, when possible.

CLOSING CIRCLE

(LAST 20 MIN OF THEIR FINAL DAY, EITHER THURS. OR FRI.)

For the immersion weeks, our closing circles are designed as a culminating process. The tasting is prepared by one of the track groups, and it usually consists of a prepared snack. Some of the prepared tastings we've done are kale pesto on bread and salad wraps with fava bean puree or beets.

- The tasting is introduced and served in the Ramada. The same protocol is observed, where students wait to eat until everyone is served.
- Report backs are done after the tasting. Each group has the opportunity to share about their week.
- Appreciations and shout-outs are done, if time permits.


REDWOOD UNDERSTORY
GREY WATER BASIN
WORM BIN
OUTDOOR KITCHEN
OFFICE
BERRYMAN ENTRANCE
ALICE'S OLIVE
ESPALIER APPLE LINE
BACK 40
COMPOST PILE
RAMADA
THE LONG TABLE
KITCHEN
MOTHER OAK
PHOEBE TANNER'S POLLINATOR GARDEN
SOLAR PANEL
POND
CULINARY BAY ARCH
IRON TUNNEL
ECHIUM
CHICKEN COOP
TOOL SHED
GREENHOUSE
OLIVE GROVE
SOIL BINS
PIZZA OVEN
STONE FRUIT ORCHARD
= WATER FOUNTAIN
RAIN WATER CATCHMENT
STAIRS TO BASKETBALL COURT
BEEHIVE
HILLSIDE APPLE ORCHARD
THE EDIBLE SCHOOLYARD BERKELEY

Edible Schoolyard Garden Infrastructure and Systems

Summary

Our garden infrastructure and systems directly inform how we run our classes. In the Edible Schoolyard garden, all of our systems and structures have been designed and built in collaboration with builders, artists, and students with the intention of empowering students to operate independently in the space and creating rich opportunities for exploratory learning. Below, we describe the major structures in our garden with notes on their design and use. We hope that this context will allow you to understand how our specific infrastructure and systems support our students' experience and the curriculum we teach. The intention of this document is to enable you to more easily adapt what you find useful or interesting to your own garden classroom.

RAMADA

The Ramada is the central meeting place for beginning and ending each garden class. The 20-foot diameter weblike wooden structure is laced with deciduous kiwis that climb up the sides and canopy over the top, proving shade in the summer months and a feeling of intimacy and enclosure within the larger open space of the garden. Benches around the circumference provide more than 30 seats—enough for all the students, teachers, and volunteers in our typical garden class. The circular space allows for group discussions, demonstrations, tastings, and games. In the Ramada, students are held to the same behavioral expectations as in the classroom (i.e., engagement and focus).

IRRIGATION

We primarily use drip irrigation in our annual beds and orchards with sprinklers in most of our perennial beds. A basic irrigation timer is used in our greenhouse so the baby plants can get watered on the weekends and school holidays when we are not around.

GREENHOUSE

The greenhouse allows garden teachers and students to propagate plants for the Edible Schoolyard garden, the annual plant sale, and donations for other local garden programs. In the greenhouse area we work with students to propagate plants by sowing seeds, using cuttings, grafting, or making divisions from existing stock.

SOIL BINS

The soil bins store potting mix ingredients, including finished sifted compost, sand, a purchased base mix, and amendments such as peat moss and perlite. With these ingredients we are able to make custom soil mixes that we use in propagation.

COMPOST ROW

We compost garden scraps and food scraps from the ESYB kitchen in a row of free-standing compost piles called Compost Row. The free-standing system allows students to comfortably stand around the compost and turn the piles together as a group. Students are able to observe the different stages of decomposition from pile to pile. In addition to our free-standing pile system, we also utilize some passive forms of decomposition such as a worm bin and a "no-fuss" pile. The no-fuss pile is a cylindrical wire frame that we fill with raked-up leaves. The leaves slowly decompose over time without turning.

WORM BIN

The worm bins, located behind our outdoor kitchen, are wooden bins used for decomposing food scraps.

We intentionally have worm bins near our outdoor kitchen for easy access to composting food scraps. Here, students learn about the importance of worms as decomposers and harvest worm castings. Worm castings are incorporated into our soil mixes for propagation.

CHICKEN COOP

In the Edible Schoolyard program, the presence of chickens and ducks has fostered a nurturing spirit within the student body and added tremendously to student buy-in, especially with students who might not otherwise be as interested in the garden. Garden teachers integrate "chicken time" into classes as much as possible and students are encouraged to check for eggs before school, during garden and kitchen classes, and after school. The capacity of the chicken coop in the Edible Schoolyard is about 30 birds. In addition to providing opportunities for learning about small-scale animal husbandry, garden eggs are often incorporated into kitchen classes, and garden teachers encourage students to move the chicken tractor—a small mobile coop that is used to concentrate beneficial chicken scratching, fertilization, and consumption of weeds and insects to garden beds as part of cultivating.

TOOL SHED

All our garden tools and equipment live in the Tool Shed. Every tool has a clearly labeled home, and tools are stored on hooks or open shelves so that they are easily visible. In addition to the tool shed, tools are stored on mobile racks that are wheeled out in front of the tool shed each day, which allows more students access and prevents any congestion around choosing tools. Tools in the Tool Shed are marked with yellow tape while tools from the mobile racks have red tape, allowing students to put them back where they found them. Students independently choose and put away garden tools every class. The tool cleaning station is adjacent to the tool shed. After every garden class, students scrub their tools clean in barrels filled with linseed oil and sand. This is a water-free way for students to clean and put away their tools, leaving things ready for the next class.

RAINWATER CATCHMENT SYSTEM

The gutters on both sides of the tool shed connect to catchment tanks that allow us to capture hundreds of gallons of unchlorinated water every time it rains. Students learn here about water conservation and recycling. This system was made possible through a grant from the Alameda Countywide Clean Water Program.

WOOD-FIRED OVEN

The wood-fired oven—built of stones, bricks, and mortar—provides a great way to incorporate cooking in the garden. We use the oven with students to roast potatoes, beets, and carrots, and make pizza. The oven is also used for schoolwide events.

OUTDOOR KITCHEN

The outdoor kitchen provides a covered space with sinks in the garden, shielded from the sun and rain. The covered space is large enough for 10-12 students. Adjacent to the outdoor kitchen is our Long Table; students use this space to eat together the food that is prepared during garden class. Our outdoor kitchen is near a building that can supply us with electricity, which allows us to power our electric burners when making hot food. Students built a constructed wetland to receive the water from the sinks of the outdoor kitchen. We refer to this as our graywater basin. The plants in this wetland absorb and filter the graywater before it goes into the garden. Aside from cooking, we use the covered space for processing the harvest, preparing the tasting, making flower bouquets, afterschool class meet-ups, and any academic lessons that require a table.

POND

The pond provides a calming place in the garden for students and teachers to enjoy while also adding a unique ecosystem to explore. Aquatic plants vegetate the pond and perimeter while a solar-powered

waterfall cascades into small pools that circulate the pond's water. Our ducks love playing and bathing in the pond. We stock fish in the pond to eat mosquito larvae.

BEEHIVE

We use our top-bar beehive to teach students about the importance of pollinators and add to the overall fertility of the garden. The beehive is located on a secluded hillside in the back of the garden with a student- built fence surrounding it. Local beekeepers help us maintain the hive. We incorporate honey from the hive (when available) into our Bee Lesson, where students are given the opportunity to taste fresh honeycomb.

ORCHARDS

We have two orchards in the garden: the Hillside Orchard, comprising about 30 fruit and nut trees, and the Triangle Orchard, with nine stone fruit trees. The fruit from both is harvested and used in the kitchen classroom or garden lessons whenever possible. The Hillside Orchard is terraced, maintained and improved each year by students. It also has swales—ditches dug along the contour of a slope to collect rainwater on-site, thereby reducing the need to irrigate the orchards. The swales help prevent erosion and usually can store enough rainwater to the point of saturation, allowing the orchard trees to be less dependent on irrigation.

PERIMETER FENCE

The perimeter fence is a 6-to-7-foot open-air metal mesh fence that keeps deer out of the garden without obstructing lines of sight. By keeping deer out, we are able to protect our crops from their nibbling mouths, and keep out any contaminants they may bring with them.

Tool Shed Contents

Working with tools is an essential aspect of every student's experience at the Edible Schoolyard.

Students are introduced to tool safety in their classrooms before they come out to the garden, and then they are given a tool shed orientation during their first garden class. Below is a list of tools we find essential to run a successful garden program, along with a list of optional tools we find useful to run a large middle school (or high school to adult) program. Choose the tools from the optional list that will be best suited to your program.

Essentials in the ESY Tool Shed

- Hand-cultivation tools like trowels
- Rakes (T and fan)
- Spaded forks
- Shovels (flat, round, snow)
- Clippers
- Loppers
- Gloves
- Harvesting baskets and crates
- Buckets
- Sturdy wheelbarrows
- Broom
- Hoses
- Watering cans
- Trashcan with lid
- Saws (pruning, bamboo, grass, and carpentry)
- Basic carpentry/plumbing tools (hammers, pliers, wrenches, screwdrivers)
- Basic carpentry/plumbing hardware (nails, screws, nuts, bolts, tape, staples, replacement fittings, valves, heads, etc.)
- Wire
- Twine and rope
- Wooden stakes
- Organic soil amendments (rockdust, feather meal, kelp meal, oyster shell)
- Bamboo (for structures, trellising, fencing, stakes)

Optional

- Pitchforks
- Hoes
- Sledgehammers
- Pick axes
- Fence post pounder
- Sprinklers
- Watering wands
- Egg baskets
- Compost thermometer
- Greenhouse aprons
- Crowbar
- Sunscreen
- Pads (for seating on wet days)
- Ponchos or rain jackets
- Rubber boots
- Screens (for winnowing amaranth and other grains)
- Bowls (for seed saving, winnowing)
- Wire brushes
- Plastic scrapers
- Linseed oil (to be added to sand for tool cleaning)
- Liquid Fence (deer repellent)
- Backpack sprayer (for foliar feeding)
- Mower
- Weed whacker
- Rototiller
- Gasoline
- Ladders (including tripod orchard ladder for harvesting/pruning fruit trees)
- Large umbrellas with stands

Compost Lab

Summary

In this 6th grade science class, students will begin to understand the process of decomposition and learn about the organisms responsible for breaking down matter. Students will also begin to make the connection with finished compost as food for plants in the garden.

Objectives

After this lesson, students will be able to:

- Explain the different layers in a compost pile (browns, greens, food scraps, manure, water, and air)
- Identify the organisms responsible for decomposition, FBI (fungus, bacteria, invertebrates)
- Explain the process of decomposition
- Explain the importance of compost

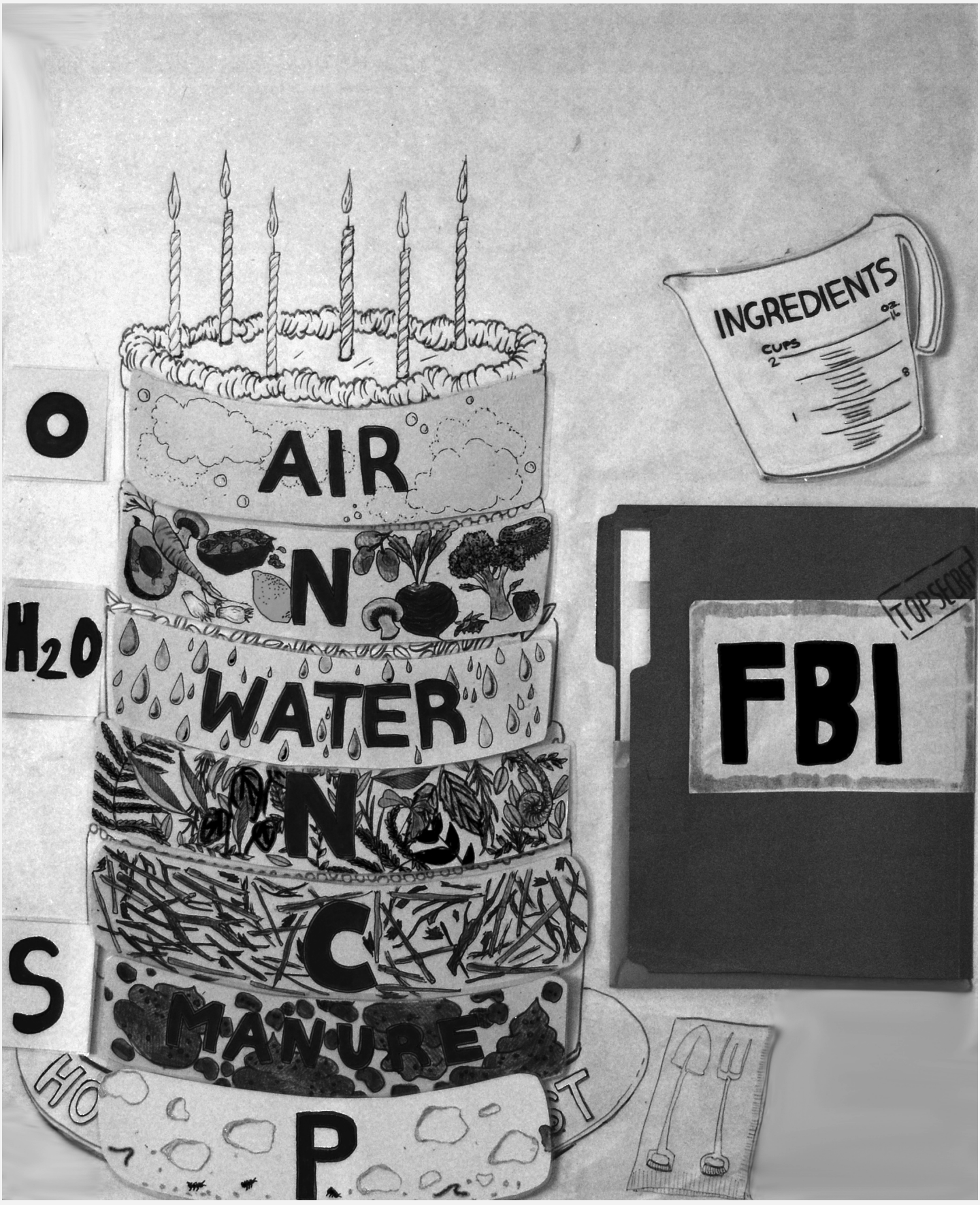
Assessments

During this lesson, students will:

- Discuss and label the necessary components of the compost pile using the Compost Cake visual aid (browns, greens, food scraps, manure, water, and air)
- Discuss the organisms responsible for decomposition (fungus, bacteria, and invertebrates)
- Identify and discuss compost at several different stages on Compost Row from food scraps to fertile soil
- Discuss that making compost piles speeds up decomposition, reduces waste, and replenishes soil

Materials

- ☑ Compost pile or Compost Row (several piles of compost at different stages of decomposition)
- ☑ Example of deconstructed compost: three small piles of greens, browns, and food scraps
- ☑ Compost Cake visual aid
- ☑ Compost Cake ingredient cards with Velcro backing
- ☑ File folder labeled “Top Secret” with images of the FBI inside
- ☑ Thermometer
- ☑ Bucket of sifted finished compost


O
AIR
N
H2O
WATER
N
C
S
MANURE
P
INGREDIENTS
CUPS
FBI
TOP SECRET

Before You Begin

- ☑ Build a compost pile (Compost Row)
- ☑ Gather materials for your greens layer, browns layer, and food scraps into small piles near your compost, as examples of compost deconstructed
- ☑ Insert a thermometer into the hot pile
- ☑ Create the Compost Cake visual aid
- ☑ Create the Compost Cake ingredient cards
- ☑ Create the FBI images and their "Top Secret" folder

Procedures

1 AT THE OPENING CIRCLE

1. Welcome students and introduce the Compost Lab by asking students to help us with this "Mystery of Decomposition." Ex. "Help us with this mystery. What is going on with this apple (insert any half-rotten piece of fruit)? It's not looking so good..."
2. Have students participate in a Think-Pair-Share and discuss what they think is going on with the apple. Ask for two or three people to share out their thoughts. If possible, have students build on the ideas of others in the conversation.
3. Explain that students will take a break from their working groups to visit the Compost Lab. Explain that the garden can be thought of as an outdoor laboratory – a place to experiment and figure things out together.
4. Go over the garden jobs and divide students into working groups. In your small group, ask students to share one question they have about decomposition before participating in the lab.

2 AT THE COMPOST STATION

1. Start with an exploration activity. Ask students, "How many things can you find in the compost pile or in the area that you think are connected to the mystery of the apple [or to decomposition in general]?"
2. Come back together as a group and have the students do a Think-Pair-Share discussing how what they found is connected to the decomposition of the apple. Once they have finished sharing with each other ask several students to share out with the group what connections they or their partner have made during their discussion.
3. Show students the Compost Cake visual aid and explain that building a compost pile is similar to building a layer cake. This layer cake/ compost pile is feeding the FBI.
4. Show students the Compost Cake ingredient cards, and invite them to identify each one as they are arranged on the visual aid: C is for Carbon (sticks, straw, dry material "the browns"), N is for Nitrogen (living plant matter like leaves and grasses,

"the greens"), M is for Manure (horse, duck, chicken manure, which are rich in microorganisms), N is for nitrogen (this time from food scraps).

5. Explain that Decomposers, like all living organisms, have three main needs for survival; food, water, air. When building our compost piles, we are creating an environment suitable for the FBI by providing food, water, and air.
6. Open the "Top Secret" file folder and have students identify the FBI while looking at images of each.
7. Have students review what elements are found in the staged piles of food scraps, browns and greens. (carbon and nitrogen). Explain that we layer the browns, greens and food scraps to make our compost piles.
8. Have students gather around the newest hottest compost pile and direct students' attention to the thermometer in the compost pile. Take guesses from students on how hot the compost pile gets and why it heats up. Have students read the thermometer and explain that decomposition is happening fastest when the compost is at the ideal temperature of 130-160 degrees Fahrenheit.
9. Take guesses for what causes the heat. Draw an analogy between a middle school dance with a hundred students moving around in one room, and the bacteria in the compost pile. Individually, we hardly notice our own body heat, but when we are all together eating, digesting, and moving around, our heat is noticeable and the room heats up. Explain that the billions of active bacteria give off heat while they decompose the pile.
10. Show students the progression of the compost piles from start to finish with a walk down Compost Row. Ask students to make an observation about the difference between the first and the last pile (looks like soil, no longer hot, can no longer recognize the parent material, smaller in volume).
11. After showing all the stages of decomposition, gather students around a bucket of sifted finished compost.
12. Invite students to hold finished compost in their own hands. Explain that the components of this pile have been decomposed and changed into living soil. Take a handful of soil and explain that there are billions of bacteria in each handful.
13. Prompt students to think about why we might build compost piles in the garden when decomposition is occurring all around us all the time. Explain to students that composting speeds up decomposition, reduces waste, and replenishes soil. Ask students to now come up with a working definition of decomposition together. Have a student read aloud the dictionary definition of decomposition and notice how the two are similar.

3 AT THE CLOSING CIRCLE

1. Ask students to think about one question they have about compost. Facilitate a Think Pair Share discussing a question they have about compost. Share out.

Vocabulary

- Fungus
- Bacteria
- Invertebrate
- Decomposition
- Living Soil

Teaching Notes

Students learn that the process of decomposition helps reduce waste and replenishes soil by amending the soil with finished compost. The concept of soil fertility is discussed. Students are given the opportunity to learn that topsoil is alive and is a habitat for many organisms. Healthy soil translates to healthy plants and healthy plants translates to healthy humans and animals. The concept of Matter Cycles is used to drive home this point.

The nuts n bolts skill of how to build a compost pile is valuable for students to know in our collective effort to maintain the garden space.

Throughout the year when groups are working on composting they can reference the compost lab to bring meaning to the work.

☑ Connections to Standards

CALIFORNIA STATE, SCIENCE, GRADE 6

6.5.b Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.

6.5.e Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.

EDIBLE SCHOOLYARD 3.0 IN THE GARDEN CLASSROOM, GRADE 6

Techniques 2.3: Identify layers and components of a compost pile; observe fungus, bacteria, and invertebrates in decomposition; tend compost with guidance.

Contributors

All lessons at the Edible Schoolyard Berkeley are a collaboration between the teachers and staff of the Edible Schoolyard and Martin Luther King Jr. Middle School.

Decomposition

The process of breaking down organic material, such as dead plant or animal tissue, into smaller molecules that are available for use by the organisms of an ecosystem.

1. I am still wondering this about decomposition:

_____

Potting Soil Mixes for Bulk and Small-Scale Garden Use

Seedling Tray Mix

ENOUGH FOR 20 125-200 CELL TRAYS

- ☑ 2 5-gallon buckets of sphagnum peat moss, run through a sifter first and moistened
  You may also use coco-peat moss which is a renewable resource material that we use in our Edible Schoolyard potting mixes.
- ☑ 1 ½ buckets vermiculite (OMRI certified)
- ☑ ½ bucket worm castings
  or vegetables
- ☑ ¼ bucket perlite (OMRI certified)
- ☑ ¼ #10 can bone meal
- ☑ ¼ can kelp meal
- ☑ ¼ can gypsum

Mix together well in a wheelbarrow, making sure that your ingredients are moist. Fill your seedling trays, making sure that your mix is settled in the trays. Be sure to reserve some mix and vermiculite for covering the seeded cell-flat trays once they are sown.

Seed Flat "Breakfast Mix"

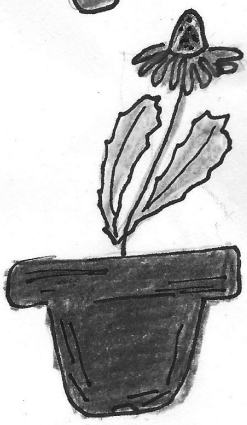
FOR STARTING SEEDLINGS IN OPEN BOXES / NO COMPOST REQUIRED

Fill a wheelbarrow ½ full with organically certified potting soil (OMRI certified – Black Gold is a good commercial mix). Add some garden soil to the mix as a local "inoculant."Mix in:

- ☑ 1 5-gallon bucket peat moss
- ☑ ½ bucket vermiculite
- ☑ ½ bucket perlite
- ☑ ¼ #10 can kelp meal and gypsum

Potting Soil

LUNCH MIX



- 1 wheel barrow of base soil
- 1 wheelbarrow of compost
- A couple shovels of sand
- 1/4 wheel barrow of sifted "No Fuss" compost

amendments:

- 1 cup Green Sand
- 1 cup Oyster Shell
- 1 cup Rock Dust
- 1 cup Feather Meal

adult Supervision for Perlite

- if making soil mix with students pre-soak the perlite with water

Instructions:

- ON GROUND OR IN WOODEN BIN COMBINE ALL INGREDIENTS & AMENDMENTS
- MIX THOUROUGHLY
- MOISTEN AS NEEDED

Recommended Seed Companies

Compiled by the Occidental Arts & Ecology Center

Baker Creek Heirloom Seeds – www.rareseeds.com
Offers open-pollinated, natural and non-GMO seeds.
Excellent selection of interesting heirloom varieties.

Becker's Seed Potatoes
R.R. #1, Trout Creek, Ontario, POH 2LO

Bountiful Gardens – www.bountifulgardens.org
Offers untreated, open-pollinated heirloom seeds and publications.
Offers many varieties as Certified Organic, Natural or Grow Biointensive™

Cooks Garden – www.cooksgarden.com
Offers heirlooms and some organic varieties.

Fedco – www.fedcoseeds.com
A cooperatively-owned seed company specializing in cold-hardy varieties.
Offers many varieties of Certified Organic and heirloom seeds.

High Mowing Organic Seeds – www.highmowingseeds.com
Farm-based family-owned company that offers Certified Organic, heirloom and open-pollinated seeds.

Horizon Herbs – www.horizonherbs.com
Farm-based family-owned company that offers Certified Organic seeds and medicinal herbs.

J.H. Hudson Ethnobotanical Catalog of Seeds – Str. Route 2 Box 337, La Honda, CA 94020

John Scheepers Kitchen Garden Seeds – www.kitchengardenseeds.com
Does not sell treated or genetically modified seeds.

Johnny's Selected Seeds – www.johnnyseeds.com
Employee-owned producer and merchant that offers a wide range of crops.
A number of certified organic seeds are offered.

Native Seed Search – www.nativeseeds.org
A non-profit organization that conserves and distributes a diverse variety of seeds from the American Southwest and northwest Mexico.

Nichols Garden Nursery – www.nicholsgardennursery.com
Family-operated business that offers open-pollinated and hybrid seed appropriate for Northern California and the Pacific Northwest.

Parks Seed Co – www.parkseed.com
Provides only untreated, non-genetically-modified seed, a source of some Certified Organic seeds.
Specializes in flowers.

Pinetree Garden Seeds – www.superseeds.com
Good selection, very inexpensive.

Renee's Garden Seeds – www.reneesgarden.com
Offers heirloom, open-pollinated and hybrid seeds.
No treated or GMO seeds.

Richters – www.richters.com
Great selection of culinary and medicinal herbs. No genetically engineered seeds sold.

R. H. Shumway – *www.rhshumway.com*
Established in 1870, beautiful catalog, interesting varieties.

Ronnigers Seed Potato – www.ronnigers.com
Certified seed potatoes.

Seeds of Change – *www.seedsofchange.com*
Offers open-pollinated, organically grown, heirloom seeds.

Seed Savers Exchange – *www.seedsavers.org*
A non-profit organization dedicated to saving heirloom seeds.
Has some Certified Organic seeds.

Southern Exposure Seed Exchange – *www.southernexposure.com*
Specializes in open-pollinated seeds.
Many Certified Organic seeds available.
No GMO seeds.
Emphasizes varieties adapted to the Mid-Atlantic region.

Stokes – *www.stokeseeds.com*
Offers open-pollinated and hybrid vegetables and flowers.

Territorial Seed Co. – *www.territorialseed.com*
Wide variety of open-pollinated and hybrid seeds.
Many appropriate for cool climates.
Organic seeds available.

Tomato Growers – *www.tomatogrowers.com*
Tomato and pepper varieties.
Open-pollinated and hybrid seeds available.

Totally Tomato – *www.totallytomato.com*
Tomato and pepper varieties. Open-pollinated and hybrid seeds available.

Turtle Tree Seeds – ***www.turtletreeseeds.com***
Open-pollinated and biodynamically grown seeds.
Demeter Certified.
No GMO seeds.

Vermont Been Seed Co – *www.vermontbean.com*
Offers a wide variety of fresh and dry bean varieties.

Wild Garden Seed – ***www.wildgardenseed.com***
Farm-based organic seed company in the Pacific Northwest.
Fantastic selection of open-pollinated varieties.

Soil Mixture Components

When choosing ingredients for making a good potting mix or when selecting a potting soil mix that is already made, check to make sure the ingredients of the mix you choose are organically grown so that no toxins or chemical sprays are present in the ingredients you are handling.

Here is a list of our favorite chief ingredients commercially available:

COCO PEAT

This product is a reliable renewable-resource alternative to peat moss, which is mined from ancient peat bogs. Organic and biodegradable, Coco peat is made from the husk fiber of coconut plants and provides nutrients and water storage as well as disease resistance when added to seedling potting mix. The coconut plant annually sheds its bark so this product is a true renewable resource.

VERMICULITE

This product is made from mica rock, which is puffed under pressure and 2000° heat to create a soil-free product that increases aeration, as well as nutrient retention and exchange.

PERLITE

This volcanic rock product is produced by heat-popping lava rock. Perlite helps in soil drainage and is an excellent medium for rooting plant cuttings.

PEAT MOSS

This is a generic term for any plant that partially decays underwater. Most gardeners use sphagnum peat moss gathered from Canadian peat bogs. This product is extremely retentive of water and has excellent antibiotic properties. However, peat moss is being rapidly depleted by mining the ancient peat bogs where it is found.

WOOD PRODUCTS

There are numerous sifted wood products that can be useful in potting mixes. If you choose these materials look for products made from decayed bark rather than from sawdust since bark decomposes more quickly and does not tie up nitrogen-loving bacteria in the same way that wood chips or sawdust tend to do.

Information on Growing Food in Times of Climate Challenge

Websites and Films

THE CALIFORNIA CLIMATE AND AGRICULTURE NETWORK (CALCAN)

www.calclimateag.org

This top-notch coalition advances policies to support agriculture in the face of global climate change.

THE NATIONAL SUSTAINABLE AGRICULTURE COALITION (NSAC)

www.sustainableagriculture.net

An alliance of grassroots organizations advocating for the sustainability of agriculture, food systems, natural resources and rural communities. NSAC publishes informative Action Alerts in their Weekly Roundup.

THE GREENHORNS

www.thegreenhorns.net

This non-traditional grassroots nonprofit organization is composed of young farmers and a diversity of collaborators. Please review their new Farmers' Almanac and the affiliated work of Agrarian Trust.

POINT BLUE: CONSERVATION SCIENCE FOR A HEALTHY PLANET

www.pointblue.org

This excellent nonprofit organization has been serving the conservation community for 50 years. They are innovative leaders in developing climate -smart conservation science and offering nature-based solutions to global climate change. In particular, see President and CEO Ellie Cohen's weekly blog, Ecology and Climate Change News.

SYMPHONY OF THE SOIL: A FILM BY DEBORAH KOONS GARCIA

www.symphonyofthesoil.com (to order film)

Filmed on four continents and featured world esteemed scientists, this important film highlights the latest research on soil's key role in ameliorating the challenging environmental issues of our time Lily Films, 2012.

Recommended Books

GROWING FOOD IN A HOTTER, DRYER LAND, GARY PAUL NABHAM. WHITE RIVER JUNCTION, VT: CHELSEA GREEN PUBLISHING, 2013.

This excellent and timely book includes practical principles and techniques from desert farmers on adapting to climate uncertainty.

MANIFESTOS ON THE FUTURE OF FOOD AND SEED, VANDANA SHIVA. CAMBRIDGE, MA: SOUTH END PRESS, 2007.

This excellent document lays out, in practical steps, a program to ensure that food and agriculture remain socially and ecologically sustainable.

OMNIVORE'S DILEMMA (YOUNG READERS EDITION), MICHAEL POLLAN. TURTLEBACK, 2009.

Delves into facts about food and global health implications resulting from food choices made by people around the world, encouraging readers to consider their food choices and eating habits. For use in schools and libraries only.

ORIGINAL INSTRUCTIONS, ED. MELISSA NELSON. ROCHESTER, VT: BEAR AND CO.,2008.

For millennia, the world's indigenous peoples have managed reciprocal relationships between diverse biological ecosystems in order to transmit traditional ecological knowledge and native foodways.

BRAIDING SWEETGRASS: INDIGENOUS WISDOM, SCIENTIFIC KNOWLEDGE AND THE TEACHINGS OF PLANTS, ROBIN WALL KIMMERER. MINNEAPOLIS, MN: MILKWEED EDITIONS, 2013.

This beautifully written book enriches the world of science with the ancient knowledge and teachings of indigenous cultures.

A PEOPLE'S CURRICULUM FOR THE EARTH, ED. BILL BIGELOW AND KIM SWINEHART. MILWAUKEE, WI: RETHINKING SCHOOLS PUBLICATION, 2014

This educator's toolkit offers a critical resource for teaching about climate change and the environmental challenges of our times..

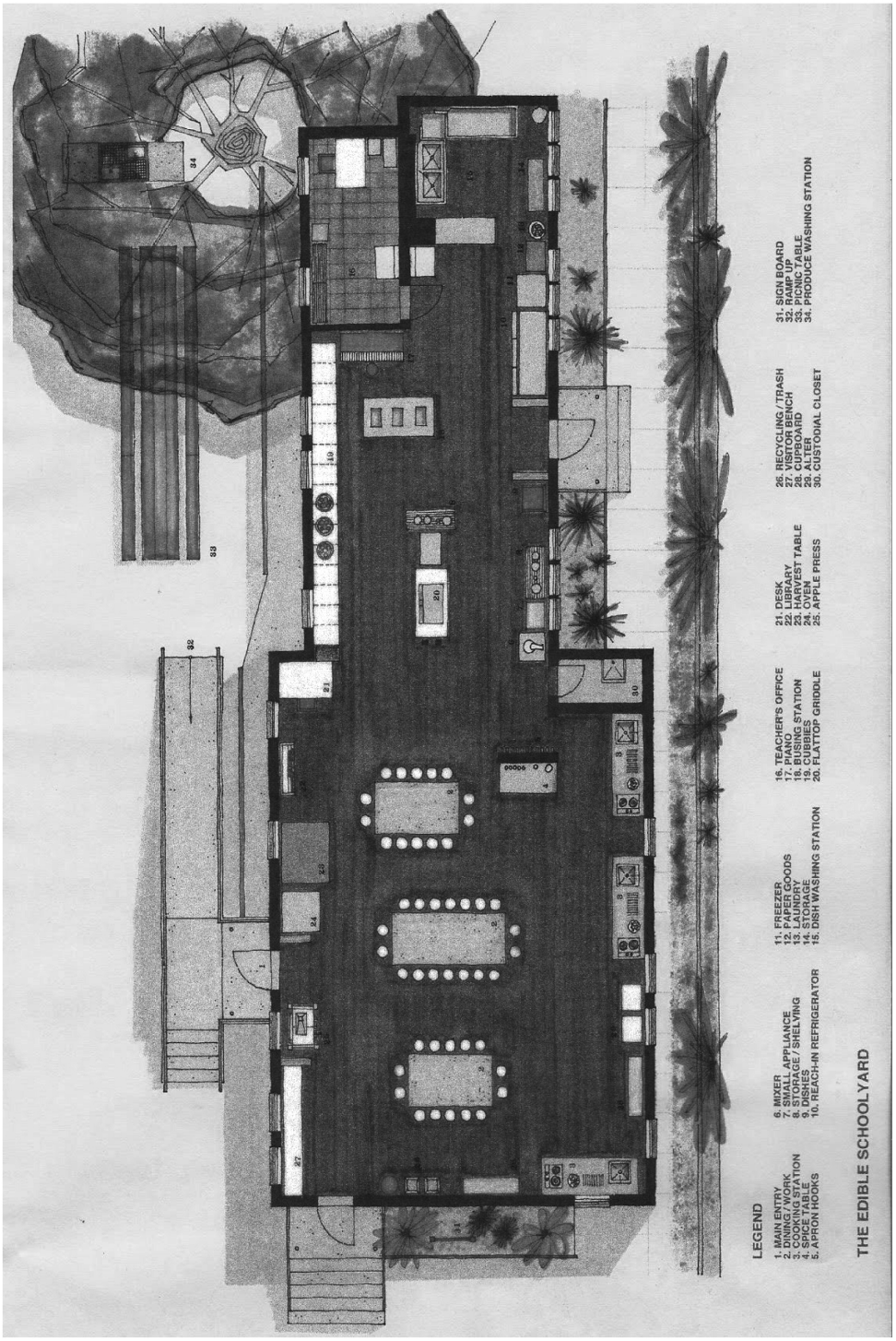
GUIDE TO PLANET EARTH, ART SUSSMAN. SAN FRANCISCO, CA: WEST ED, 2000.

A superb primer on the web of life and the interconnection of earth's physical and life systems. An excellent guide for those working with middle and high school students.

DOCTOR ART'S GUIDE TO SCIENCE, ART SUSSMAN. SAN FRANCISCO, CA: WEST ED, 2006.

An exploration of the primary ideas of science, this volume comes with an excellent DVD that models innovative ways to teach key scientific concepts.

Edible Schoolyard Kitchen Floor Plan



Edible Schoolyard Kitchen Equipment, Infrastructure, and Systems

Our kitchen infrastructure and systems directly inform how we run our classes.

In the Edible Schoolyard kitchen, our space has been specifically designed to enable students to operate independently and create rich opportunities for exploratory learning. Every choice—from the number and size of our tables, the location of cooking tools and equipment, to the layout of our toolboxes—has been made with the intention of creating intuitive, user-friendly systems. Below, we describe our key kitchen equipment and systems, and discuss the role each element plays in a typical kitchen class. At the end, we include inventories of the tools and equipment we use in our kitchen classroom for reference. We hope that this context will allow you to understand how our specific infrastructure and systems support the curriculum we teach and enable you to more easily adapt what you find useful or interesting in the lessons that follow to your own kitchen classroom.

A Typical Kitchen Class: An Infrastructure and Systems View

CUBBIES

The first thing students do when they enter the kitchen classroom for a kitchen lesson is to put their backpacks and any other stuff (including their phones) in a cubby. This reduces clutter and keeps the space safe by limiting potential distractions, reducing the possibility of unwanted materials or germs entering the food, and eliminating the tripping hazard of stray backpacks and sweatshirts.

THREE GROUPS, THREE TABLES, THREE COOKING STATIONS

The most fundamental design feature of our kitchen space is that it is set up to support three small groups cooking relatively independently from one another. In the center of the room are three main tables, each of which seats up to about 15 people. At the start of each class, everyone meets around the center table for the Chef Meeting, and then students break into their small groups, one group at each table. Tables are labeled by color (red, green, and blue), and each has a toolbox and small compost bin, also labeled with colored tape that matches the table color. Each toolbox contains basic knives and measuring devices, and each cooking station has a sink, two electric burners, basic pots and pans, and cleaning supplies (for a comprehensive list of toolbox and cooking stations tools and items, see “Kitchen Station Inventory”). The drawers and cabinets of the cooking station bear signs and other visual cues that remind students what goes where. Students in the table groups are responsible for the care of all tools and equipment in their toolbox and at their cooking station.

TOOLBOXES

We emphasize the use of real tools in the kitchen. Professional tools instill a feeling of responsibility in students as well as an expectation of serious effort. Our toolboxes contain all the tools students most commonly used in class, including chef knives and paring knives (for a comprehensive list, see

"Toolbox Inventory"). The toolboxes and tools are all labeled with colored tape that matches the table color, helping students to easily return tools to the correct place after use. Toolboxes are open and have a clearly defined place for every tool. This allows students to easily and safely take knives out of the toolbox and replace them when they're done. Before every class, we wet two small towels and place them on the toolboxes—students use these towels to wipe down their knives after using them as opposed to washing them in the sink. This means that during class, knives never leave the tables, a key to keeping the space safe while the students use sharp knives.

SPICE TABLE

We keep our spices, vinegars, and sauces on the Spice Tables. Putting these ingredients in a single, visible place with counter space allows students from all three groups to easily experiment with different flavors, keeps ingredients accessible by all three groups, and prevents the main working tables from becoming overcrowded with jars, bottles, and cutting boards. Below the spice table are containers for students to take leftover food to go.

DISH CUPBOARD, DISH TOWER, AND METRO SHELF

Dishes for setting the table and eating are stored in the Dish Cupboard; the Dish Tower stores platters and various serving bowls; and the Metro Shelf stores larger stockpots, mixing bowls, and a variety of cooking tools like spatulas, tongs, ladles, and sieves. All three are open-face and clearly labeled to show the correct place for the tools and utensils that belong there.

ALTAR

Each time students set the table to eat they have the opportunity to decorate their table with bouquets, items harvested from the garden, and other beautiful or interesting objects that the kitchen has collected over the years. We keep all of the items for table decorating on a side table called the Altar. We've found that table decorating is consistently a favorite job among our students, and often can engage students who are otherwise less interested in the cooking jobs. The Altar, boasting a range of beautiful seasonal harvest items, is an excellent physical reminder of the kitchen's link to the garden. It is also a place in the kitchen where students can find a large variety of physical touchstones that represent a diversity of cultures.

BUSSING TABLE AND DISH STATION

Cleanup is an integral part of every kitchen class. At their table groups, students practice "clean as you go" to wash the dishes and tools they use to prepare the meal. After eating, all three groups bring their plates, cups, and utensils to the Bussing Table. At the Bussing Table students scrape any leftover food from their plates into a small compost bin, pour leftover water in their glasses into a graywater bucket, and place their plate, cup, and utensils in three corresponding bus tubs. Cleanup is a rotating responsibility. One table group washes all the dishes from the Bussing Table in our commercial dishwasher at the Dish Station. The other two groups clear the tables, sweep their areas, and finish any cleanup still remaining from cooking.

RECIPE FILES

The recipe files hanging on the wall by our door contain a rotating supply of paper copies of the recipes we're preparing in the kitchen. We label the recipes clearly, and remind students at the end of every class that the recipes are available for them to grab and take home at any time. Placing them right next to the door makes them easily accessible for students on their way out.

EQUIPMENT

We have the following equipment in our kitchen classroom:

- Electric burners—six total; two at each of our three cooking stations

- Oven—freestanding convection oven
- Electric griddle—34” x 18” cooking surface
- Convection burners—kept in storage; used for lessons in which we need extra burners
- Refrigerator—three-door commercial-size refrigerator
- Commercial dishwasher
- Washer and dryer—regular front-loading

Kitchen Station Inventory

This comprehensive list of items found in our toolboxes and at our cooking stations is intended as a helpful reference to contextualize the cooking activities that follow in our lessons, as well as a guide to the items we rely on most heavily to run our programs. A student graduating from our program can expect to have used every item or tool on this list at least once, if not every time they come to the kitchen.

Toolbox

- 6 chef knives
- 2 bread knives
- 10 paring knives
- 3 crinkle cutters
- 3 bench scrapers
- 1 plastic measuring beaker
- 2 sets measuring spoons
- 1 set dry measuring cups (¼ cup – 1 cup)
- 8 vegetable peelers
- 1 garlic peeler
- 1 microplane
- 1 wooden reamer
- 1 pepper mill

Cooking Station Countertop

- 3 cutting boards for onions and garlic (blue plastic)
- 10 cutting boards for everything else (white plastic)
- 1 box grater
- 1 soap dispenser
- 1 sponge
- 1 stainless steel scrubber
- 1 sink
- 2 electric burners
- 1 drain catch
- 1 set of various utensils (spatulas, whisks, wooden spoons, and metal spoons)
- 4 hot pads
- 1 paper towel dispenser
- 2 cotton dishtowels

Cooking Station Cupboard

- 1 cast-iron skillet
- 1 cast-iron Dutch oven
- 1 cast-iron griddle
- 1 stockpot
- 1 collapsible steamer
- 1 saucepan
- 1 salad spinner
- 2 tablecloths

Knives in the Kitchen Classroom

Habits, Rules, and Skills

Knife skills are at the foundation of every students' experience in the Edible Schoolyard kitchen classroom. Before students touch knives in the kitchen, they participate in a kitchen orientation. This orientation lays the foundation for safely learning and practicing knife skills. During their first cooking class, students apply the rules and habits to preparing greens over grains and establish a positive culture around the knives that allows us to build towards advanced knife skills.

We use professional quality tools which communicates to our students they are engaging in real work. This instills a sense of pride, ownership, and responsibility. Although we always assume our students' good intent, we also establish that the kitchen needs to be a safe space for everyone, both physically and emotionally. This means we have no tolerance for gestures or references to violence, even when made in jest.

HABITS

1: Make sure you have a cutting board before selecting a knife from the toolbox.
2: Choose a knife that is appropriate for the job that you are doing.
3: Pinch the blade of the knife for a stronger grip and more control over the knife. Use the claw (fingertips and thumb tucked under) to protect yourself from cuts.
4: Protect your hands by using a bench scraper to move food off of the blade and to transfer food off of your cutting board.
5: Clean your knife at the table by wiping it down with a washcloth, making sure that the sharp edge is facing away from your hand.
6: Place the knife in the toolbox with the sharp edge down.

RULES

1: When working with a knife you should be looking at what you are doing.
2: When cutting something make sure the knife is moving towards the cutting board.
3: If you are not actively using a knife to cut something, you don't need the knife in your hand.
4: If you must leave the table with a knife, carry it safely by your side with the tip down and the sharp edge facing back.

SKILLS

1: Slice
2: Mince
3: Dice
4: Angle/Bias Cuts
5: Julienne
6: Chiffonade

TEACHING NOTES

One way to introduce and teach knife rules is to model the knife rules and then intentionally break them. Ask the students to evaluate your work with a thumbs up thumbs down vote, then call on students to explain their reasoning.

If students aren't following the knife habits and rules, ask them to pause and examine how they are working. Emphasize they are not in trouble but ask them to identify and correct the behavior in order to be safe. If there are concerns, a wavy knife or crinkle cutter is a good training tool for students to use before progressing to sharper knives.

A Typical Edible Schoolyard Kitchen Class

Overview

A typical kitchen class at the Edible Schoolyard Berkeley is between 86 and 105 minutes. Students come to the kitchen eight to ten times each year as an integral part of their school day, generally with their humanities classes and occasionally with their science, foreign language, or other elective classes. Kitchen classes tend to see between 25 and 32 students at a time, and are always taught by three Edible Schoolyard Chef Teachers, each leading a group of eight to ten students at one of the ESY Kitchen Classroom's three cooking stations.

Staffing

In addition to the Chef Teachers, one or two Edible Schoolyard community volunteers often participate in kitchen classes, engaging the students in conversation during class and helping to set up before and clean up after. The academic classroom teachers are also always present while their classes visit the kitchen, and their levels of engagement with the students during kitchen class time vary—some take it as an opportunity to engage more deeply or one-on-one with their students while cooking and eating together, while others take the opportunity to work on grading or other responsibilities. The student-to-adult ratio in any given kitchen class may range anywhere from four to ten students for every adult, depending on the size of the class, the number of community volunteers, and whether or not the classroom teacher is actively participating.

Typical Class Flow

A typical kitchen class is divided into three main parts: the Chef Meeting, At the Table, and the Closing Circle. The kitchen classroom has rituals and routines for every kitchen class, so the students know what to expect and what is expected of them. Below, we outline the flow of a typical kitchen class, including the rituals and routines associated with each section. Following that, we briefly discuss some of the logical and philosophical underpinnings of why we organize our classes the way we do. Our hope is that in discussing both what we do and why we do it, you will be able to adapt our kitchen class structure to the needs of your own program.

Entering the Kitchen

(1-2 MINUTES)

Students line up outside the kitchen classroom and wait for a kitchen teacher to greet them. Students spit out their gum, come into the kitchen in an orderly fashion, put their backpacks away in the cubbies, put on an apron, and gather at the middle table for the Chef Meeting. As opposed to having students stream in as they arrive, we let everyone in at once and students follow the same series of steps each time, setting the tone for a calmer, more focused kitchen class.

At the Chef Meeting

(5-15 MINUTES)

In the Chef Meeting we introduce and frame our lesson for the day, deliver content to all students before breaking into smaller groups to cook and eat, and facilitate class discussions. Chef Meetings vary greatly in content, framing, and duration depending on the lesson's learning objectives; some take the form of an interactive lecture, others of a demonstration, story, or skit; some are facilitated as a

group activity or discussion; and most utilize a variety of modes to deliver content in the most engaging and interesting way we can think of. In general, most Chef Meetings will explain why we have chosen the recipe we are preparing and make academic links to the students' classroom curriculum. Chef teachers rotate the role of facilitating the Chef Meeting, and often different Chef Teachers will add a personalized spin to their version of a lesson's Chef Meeting to keep it interesting, engaging, and relatable. We keep internal Chef Meeting notes for each lesson to maintain institutional memory and track modifications or improvements from year to year. The "At the Chef Meeting" section in each of the following lessons is this year's version of each lesson's Chef Meeting. In cases where different Chef Teachers had notably different versions of the Chef Meeting for the same lesson, we'll often include both versions.

At the Table

(60-90 MINUTES)

After the Chef Meeting, students wash their hands and break up into three cooking groups. Generally, the classroom teacher divides the students into three groups before arriving to their first kitchen class, and students remain in the same groups for the duration of their kitchen rotation. Each group has an average of 10 students, one ESY Chef Teacher, and one to two community volunteers. In their small groups, Chef Teachers will:

1. LEAD A SMALL-GROUP CHECK-IN

(5 MINUTES)

- Have each student answer a check-in question (e.g., If you could teach one subject in school, which would it be? What is your favorite way to eat noodles or pasta?). This can be a fun or provocative question that may or may not be food-related but will allow the teachers to get to know the students and vice versa. Check-in questions should be easy and quick to answer, answerable by all (don't rely on some specialized knowledge or experience), and interesting to hear multiple answers to. This is a great opportunity to hear everyone's voice at the table and be reminded of students' names.

2. REVIEW THE RECIPE(S) AND INTRODUCE KNIFE SKILLS AND COOKING METHODS

(2-10 MINUTES)

- Depending on the students' skill level, this may involve a detailed step-by-step demonstration or may simply be a quick verbal summary of the recipes students will be preparing that day. This is when we introduce any new cooking techniques (cutting an onion, mincing garlic, etc.); demonstrate or describe how students will prepare each ingredient on the platter and have students identify the right tools for the jobs; and break down the steps of the recipe(s), note especially important steps, and explain the cooking jobs.

3. FACILITATE THE DIVISION OF COOKING JOBS (2-5 MINUTES)

- Dividing cooking jobs can set the tone for the remainder of the class so we always try to make sure that students feel heard and respected through the process. Our goal is for the students to perceive the process as fair and match every student to a job that they are excited to do. This provides buy-in and engagement throughout class.
- For some lessons, we divide the work based on ingredients, and for others by recipe. Generally, for younger students we give individual ingredients as jobs and for older students we denote entire recipes as job groups and have them independently organize specific jobs within the recipes. Our favorite methods for dividing work (from most teacher-driven to most student-driven) are:
  - **Top Two:** After introducing the jobs for the day, go in a circle and have each student name their top two choices. Write down their preferences and try to match each student to one of their top two picks.
  - **Raising Hands:** Good for lessons when there are only a few types of jobs available. Introduce

the jobs and ask students to raise their hands to show which ones they're interested in. If the groups are appropriately proportioned, proceed with the work. If not, ask for a volunteer to switch groups.

- **Students Decide:** During Iron Chef and in our eighth-grade Independence Series, we ask our students to divide up the work and jobs amongst themselves. This is a high-level collaboration skill that we scaffold by making our processes visible in their sixth- and seventh-grade kitchen classes. In this method, the teacher introduces the recipe and invites students to read the recipe and discuss how to divide the work.

4. COOK AND SET THE TABLE (40-60 MINUTES)

- Students read the recipe together before breaking up into their cooking jobs.
- While cooking, students practice our "clean as you go" routine. We expect students to clean up after finishing a cooking job before they move on to the next task.
- Students taste as they cook and adjust the seasoning along the way.
- When the students have finished preparing the ingredients and the food is still cooking, students clean and set the table. We typically use a plate, silverware, cups, and napkins, and students are also encouraged to create a unique centerpiece using flowers from the garden and other interesting items they find around the kitchen.
- Unless we are demonstrating a new cooking method or helping a student to learn or improve a technique, teachers' hands almost never touch the food. We aim to have the students cook as independently as possible from their first time in the kitchen. We'll often encourage any adults in the space to hold on to a cup of tea or water throughout class, just to serve as a reminder to leave the cooking and cleaning work to the students.

5. EAT (10 MINUTES)

- The table group begins to eat only once every member of the group has been served.
- This is a chance to talk about ideas related to the lesson, the recipe, or whatever interests the group. Generally we try to balance time spent discussing lesson content with casual conversation.
- Since table groups sit down to eat as the food is ready, different groups may eat at slightly staggered times.

6. CLEANUP (10 MINUTES)

- When they are finished eating, each student buses their own plate, cup, and silverware to the dish station.
- One table group works at the dishwasher to wash the plates, cups, and silverware for the entire class. The other two table groups finish cleaning their table and cooking station, as well as the table and cooking station for the group at the dishwasher. Cleanup jobs include: cleaning and organizing the toolboxes, taking out the compost, sweeping, cleaning and organizing the cooking station, and helping to set up for the next class.

Closing Circle (5 MINUTES)

Closing Circle provides an opportunity for us to hear what our students took away from kitchen class. We generally ask them to rate the food on a scale of 1 to 5 using their fingers to indicate how delicious they found the meal. Depending on how much time remains, we'll also often pose a question to the group to prompt further reflection on the lesson content (e.g., If you were living at the time of the Silk Road, where would you want to live and why?), facilitate students in imagining how to apply the skills they practiced in the lesson in their own lives (e.g., If you were to prepare this recipe at home, what ingredient would you add?), or to get information on whether the learning objectives we have identified have been reached by the lesson as it has just been delivered (e.g., Can anyone tell me who or what the "three sisters" are?).

Vegetable Fried Rice

Summary

In this seventh-grade humanities lesson, students make Vegetable Fried Rice and learn about the agricultural innovations during the Song Dynasty in China that led to a surplus of rice and resulted in major cultural, technological, and scientific developments.

Objectives

After this lesson, students will be able to:

- Describe how technological and agricultural advancements during the Song Dynasty in China resulted in the ability of Chinese farmers to grow surplus rice.
- Explain why the ability of Song Dynasty farmers to grow surplus rice resulted in major cultural, technological, and scientific developments during that time period.
- Give examples of cultural, technological, and scientific developments that occurred in China during the Song Dynasty.
- Explain the connection between time, money, and cultural development.
- Give examples of components of their own cultures.
- Cut vegetables at an angle.

Assessments

During this lesson, students will:

- Describe how technological and agricultural advancements during the Song Dynasty in China resulted in the ability of Chinese farmers to grow surplus rice.
- Explain that rice was the staple crop in Song Dynasty China, and describe why the ability of Song Dynasty farmers to grow surplus rice resulted in major cultural, technological, and scientific developments during that time period.
- Name cultural, technological, and scientific developments that occurred in China during the Song Dynasty.
- Describe how they spend their time and money, and how those choices impact their "personal culture of one."
- Reflect on attributes that define the cultures of Berkeley, King Middle School, their families and friends, and their "personal cultures of one."
- Cut vegetables at an angle.

Materials

FOR THE CHEF MEETING

- ☑ Vegetable Fried Rice recipe
- ☑ Ingredients and tools for demonstration
- ☑ Visual aid

INGREDIENTS

- ☑ Olive oil
- ☑ Garlic
- ☑ Fresh ginger
- ☑ Seasonal vegetables
- ☑ Rice
- ☑ Sesame oil
- ☑ Eggs
- ☑ Soy sauce
- ☑ Salt
- ☑ Pepper

TOOLS

- ☑ Crinkle cutter
- ☑ Wooden spatulas
- ☑ Chef's knives
- ☑ Paring knives
- ☑ Cutting boards
- ☑ Measuring cups
- ☑ Measuring spoons
- ☑ Mixing bowls
- ☑ Wok

EQUIPMENT

- ☑ Stove

BEFORE YOU BEGIN

- ☑ Collect all the ingredients and tools, and then distribute them to the tables.
- ☑ Gather supplies for the Chef Meeting.
- ☑ Create the visual aid.
- ☑ Copy the Vegetable Fried Rice recipe to hand out.
- ☑ Cook and cool the rice.

Procedures

1 AT THE CHEF MEETING

VERSION #1 (IF STUDENTS HAVE NOT SEEN THE FLIPPED CLASSROOM VIDEO)

1. Welcome students and introduce the recipe for the day: Vegetable Fried Rice. People cook different styles of fried rice all around the world. Today we're going to cook a version based on the traditional southern Chinese style, and we'll be looking back at a time in history when rice became China's staple crop.
2. Believe it or not, until around 2,000 years ago, most people in China ate wheat or millet for every meal. But starting with the Song Dynasty, rice became a staple crop.
3. Ask students to define "staple crop."
4. Describe how time- and labor-intensive it was for people at this time to feed themselves, and how droughts or storms could often mean a year's entire crop might be lost because farmers could only grow one crop per season.
5. Explain how advances in technology (the chain pump, the harrow) reduced the manual labor required to grow rice, and how agricultural developments (quick-growing, drought-resistant rice introduced from the Kingdom of Champa, or modern-day Vietnam) allowed farmers to produce more crops of rice in a year

and to successfully grow rice in a wider variety of conditions. Describe how these innovations combined to create a surplus of rice during the Song Dynasty.

6. Ask students to define the term "surplus." Encourage students to "do some research" by referring the visual aid. Wait until every hand in the class is raised to call on someone.
7. Describe how the surplus of rice led to a population increase, along with the emergence of trade, commerce, urbanization, and leisure time. All these things, in turn, led to the advancement of Chinese culture, technology, and science.
8. Share some examples of the innovations that occurred during the Song Dynasty in China, including paper money, the compass, mass production of steel, gunpowder, and major advancements in understanding magnetism, optics, and that the sun and moon were round, not flat. Describe how the ceramics, poetry, and paintings from the Song Dynasty are still some of the most admired artistic artifacts in the world today.
9. Emphasize that all of these innovations occurred as a direct result of agricultural advances that allowed Chinese farmers to grow a surplus of rice.
10. We've been talking about culture, but that can be a big concept. What is culture? Facilitate students in generating a list of components/aspects of culture. This may include things like music, greetings, clothes, food, religion, etc.
11. Transition from the list of components of culture to a share out by naming that aspects of Song Dynasty culture are still present in our culture today. One example of a cultural element from Song Dynasty China that is still widely present today is that most Chinese people started eating rice and drinking tea instead of eating wheat and millet and drinking wine during the Song Dynasty—these traditions persist today and form the foundation of what most of us know and recognize as traditional Chinese cuisine. Another example is that the Song Dynasty was the first society in world history to institutionalize a "merit bureaucracy," or "civil service," in which government officials were selected for their moral qualities and performance on the civil service exam, not for their wealth or social status. This concept—that the state was responsible for ensuring people's welfare through moral, judicious, and just rule—was one of the founding ideas of American society. Even though almost one thousand years have passed since the time of the Song Dynasty, the agricultural developments in China during this time that allowed farmers to grow surplus rice were a big deal! Developments and ideas that are still very important in our lives today originated all the way back then.
12. Our culture today is a big collage of aspects and influences of many other cultures. Ask for students to share elements of their own cultures based on the categories on the class-generated list. Thank students for their input.
13. Ask students to wash their hands and join their table group.

VERSION #2 (IF STUDENTS HAVE SEEN THE FLIPPED CLASSROOM VIDEO)

1. Welcome students and introduce the recipe for the day: Vegetable Fried Rice. People cook different styles of fried rice all around the world. Today we're going to cook a version based on the traditional southern Chinese style, and we'll be looking back at a time in history when rice became China's staple crop.
2. Think-Pair-Share: Before coming here, you all saw a video about some agricultural and cultural developments that occurred during the Song Dynasty in China—if you'll recall, rice was at the center of that story. Take a moment to think back on what you remember from the video. Use the visual aid for reference. (Give students 10-20 seconds of silent reflection). Now turn to a neighbor and take about two minutes to recall as much as you can from the video. See how much detail you can use to explain the historical processes represented on the poster.
3. Facilitate a full-class summary of the historical content from the video: With a raised hand, who can share one or two points from their conversation with their neighbor?
4. We've been talking about culture, but that can be a big concept. What is culture? Facilitate students in generating a list of components/aspects of culture. This may include things like music, greetings, clothes, food, religion, etc.
5. Transition from the list of components of culture to a share out by naming that aspects of Song Dynasty culture are still present in our culture today. One example of a cultural element from Song Dynasty China that is still widely present today is that most Chinese people started eating rice and drinking tea instead of eating wheat and millet and drinking wine during the Song Dynasty—these traditions persist today and form the foundation of what most of us know and recognize as traditional Chinese cuisine. Another example is that the Song Dynasty was the first society in world history to institutionalize a "merit bureaucracy," or "civil service," in which government officials were selected for their moral qualities and performance on the civil service exam, not for their wealth or social status. This concept—that the state was responsible for people's welfare through moral, judicious, and just rule—was one of the founding ideas of American society. Even though almost one thousand years have passed since the time of the Song Dynasty, the agricultural developments in China during this time that allowed farmers to grow surplus rice were a big deal! Developments and ideas that are still very important in our lives today originated all the way back then.
6. Our culture today is a big collage of aspects and influences of many other cultures. Ask for students to share elements of their own cultures based on the categories on the class-generated list. Thank students for their input.
7. Ask students to wash their hands and join their table group.

2 **AT THE TABLE**

1. Small-group check-in: What is your favorite way to eat rice?
2. Demonstrate how to cut vegetables at an angle and explain to students that we are cutting at an angle to make the vegetables easier to pick up with chopsticks, and also to increase the surface area and decrease cook time. Explain that short, fast cook time over high heat is characteristic of the stir-fry method that we'll be using to prepare the rice.
3. Divide students into cooking jobs.
4. Prepare the recipe and set the table. Provide chopsticks for students who want to use them, and facilitate a skill share between students who know how to use chopsticks and those who don't.
5. Eat. While eating, have students share aspects of culture they identify with. If they need prompting, have them refer to the class-generated list of components of culture.
6. Clean up.

3 **AT THE CLOSING CIRCLE**

1. Ask students to rate the food on a scale of 1 to 5.
2. If there is time, ask students to share one aspect of a culture they identify with.

Teaching Notes

Think-Pair-Share as an equity strategy: If students have seen the flipped classroom video before class, we like to do a "think-pair-share" as a way to review the video content. The "think"—giving students a few moments of quiet reflection with the visual aid before they articulate concepts they remember from the video—allows students who take longer to verbalize their thoughts to participate more fully in the "share" portion of the activity. The visual aid offers an excellent access point for students who have a harder time internalizing information from just hearing it. The "pair" portion creates space for every voice to be heard in a context that can be less intimidating than in front of a whole class. The "share" portion gleans the collective wisdom from the room and establishes that all knowledge is shared, placing value on every student's contribution to the collective understanding of video content.

Knife safety reminder: This was the first lesson back in the kitchen for our seventh graders. As such, we included a brief reminder of knife technique and safety when demonstrating cutting on a bias at the small tables.

Cooking in two batches: Cooking the fried rice on high heat yields a vastly more delicious flavor and superior texture. In order to ensure even cooking and prevent burning, we cook our fried rice in two batches, reserving half the ingredients for each round of cooking. We divide our groups into two cooking teams. While the first cooking team cooks, the second cooking team finishes collecting ingredients, cleans up the table, and begins to

set the table. While the second cook team cooks, the first cook team finishes setting the table and washes the last few dishes. One huge benefit of this two-team system is that every student has the opportunity to work on the recipe from start to finish. We also often appoint one student from the first cook team to stay by the stove as a guide to the second cook team. In this case, we give them explicit instructions to help by explaining, not by doing.

Eating with chopsticks: Many of our students were not familiar with eating with chopsticks. If a student in the group was skilled with chopsticks, we often had them teach other students how to use them. If not, we offered a brief chopstick tutorial at the table just before eating or while the second cook group was finishing the second batch of rice. If we had down time at any point during the class, chopstick challenges, in which students were challenged to move uncooked grains of rice and other objects between bowls, were a big hit.

Cultural context for chopsticks: We ate our fried rice off plates. Some students became frustrated at how difficult it was to pick the last bits of rice up with chopsticks, which sometimes prompted them to deride chopsticks as an illogical and difficult eating utensil. We shared with them that eating rice with chopsticks is typically done out of a rice bowl that is brought up to your mouth.

Vocabulary

- Staple crop
- Surplus
- Culture
- Urbanize

Connections to Standards

COMMON CORE

RI.7.2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.

SL.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.

SL.1.a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

SL.2. Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.

RH.6-8.2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

RH.6-8.3. Identify key steps in a text's description of a process related to history/social studies.

RH.6-8.7. Integrate visual information with other information in print and digital texts.

RST.6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

CALIFORNIA STATE, HISTORY AND SOCIAL SCIENCE, GRADE 7

7.3.2 Describe agricultural, technological, and commercial developments during the Tang and Sung periods.

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN, GRADE 7

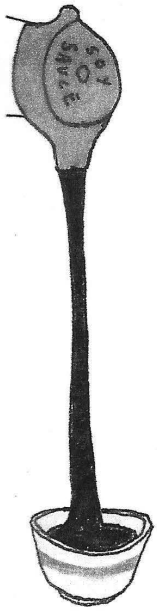
Tools 1.3 Select correct knives from the ESY Toolbox. Refine knife skills by using different cuts and seizes while demonstrating knife safety and care.

Concepts 3.11 Make connections between the diets of historic cultures and the foods we eat today

Contributors

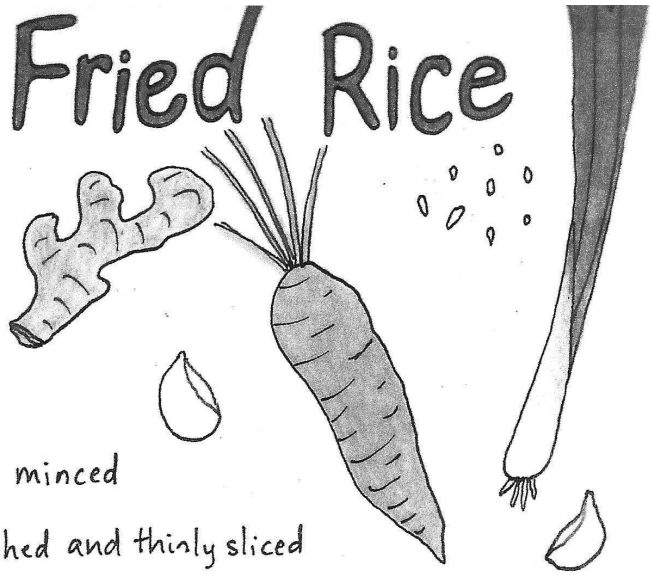
All lessons at the Edible Schoolyard Berkeley are a collaboration between the teachers and staff of the Edible Schoolyard and Martin Luther King Jr. Middle School.

Vegetable Fried Rice



INGREDIENTS

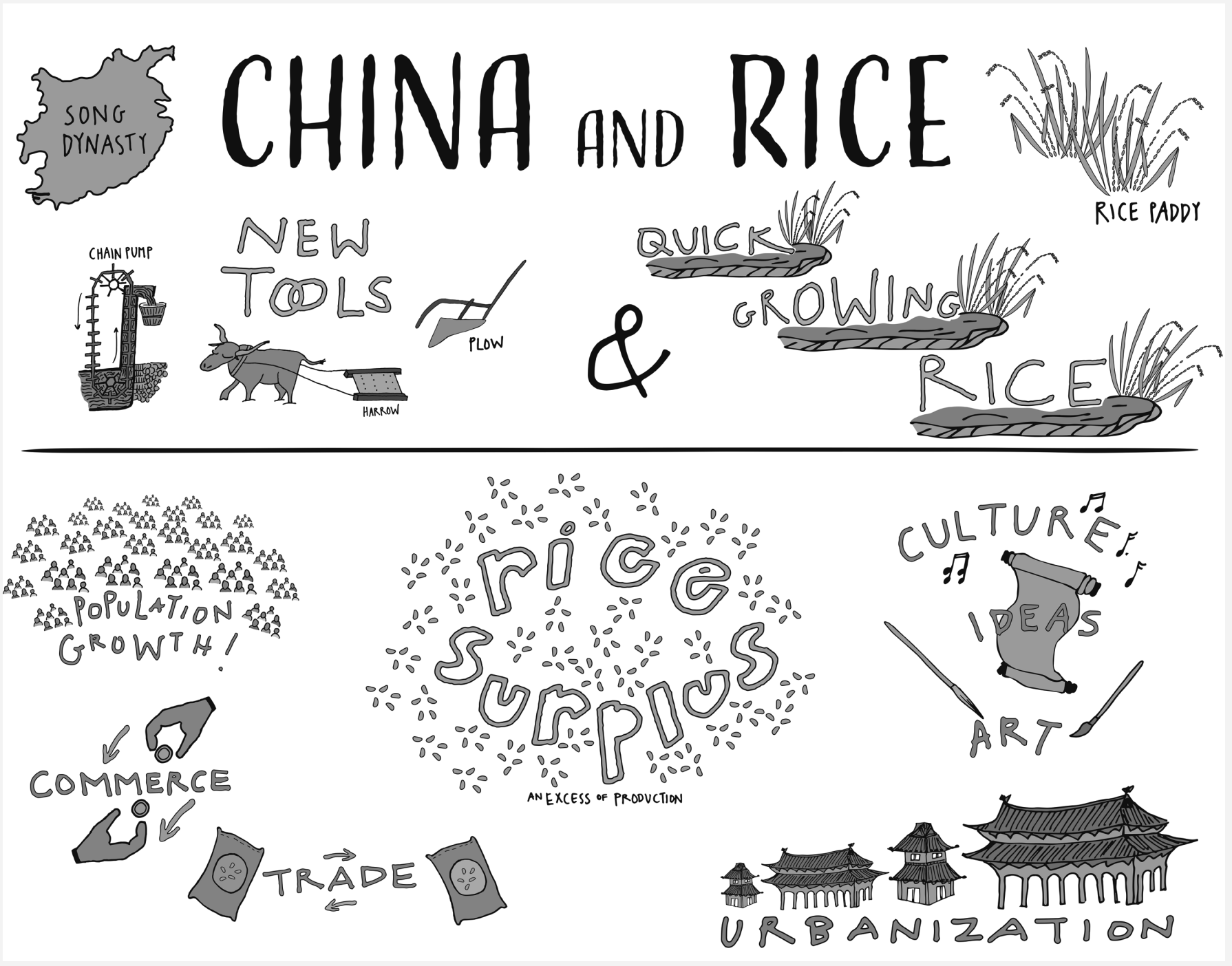
- 3 tablespoons canola oil
- 4 cloves garlic, peeled and minced
- 2-inch piece ginger, peeled and minced
- 5 cups assorted vegetables, washed and thinly sliced
- 5 cups cold cooked rice
- 1 tablespoon sesame oil
- 3 tablespoons soy sauce



- 5 eggs, whisked with
- 1 tablespoon soy sauce

* Fried rice is best cooked over high heat in small batches. If you can, cook this recipe in two batches, each using half of the ingredients listed above.

- In a wok (or large pan) heat the canola oil over high heat until it begins to shimmer. Add the ginger and garlic and stir quickly, making sure nothing sticks to the bottom of the pan. Add the crunchy vegetables (onion, carrot, celery) immediately and continue stirring. Cook for 2 to 3 minutes or until the vegetables begin to soften and look cooked. Add the leafy vegetables (bok choy, chard etc.) and cook for another 2 or 3 minutes, still stirring. When the greens look cooked add the toasted sesame oil and rice and continue to stir. After about 2 minutes scrape the rice and vegetables to the sides of the pan, uncovering the center of the pan. Add another tablespoon of oil in the empty center of the pan, and then the eggs. Scramble the eggs without mixing in the rice. Once the eggs are cooked, add the soy sauce and mix everything together. Serve hot and enjoy!


SONG DYNASTY
CHINA AND RICE
RICE PADDY
CHAIN PUMP
NEW TOOLS
PLOW
HARROW
&
QUICK
GROWING
RICE
POPULATION GROWTH!
rice surplus
AN EXCESS OF PRODUCTION
CULTURE
IDEAS
ART
COMMERCE
TRADE
URBANIZATION

Three Sisters Tacos

Summary

In this seventh-grade humanities lesson, students make corn tortillas, beans, roasted squash, and cabbage slaw. They learn about the different agricultural techniques utilized by the Maya, Aztec, and Inca civilizations, including companion-planting corn, beans, and squash.

Objectives

After this lesson, students will be able to:

- Explain the agricultural techniques used by the Maya, Aztec and Inca civilizations.
- Understand how the geographic locations, landforms, and climates of Mexico, Central America, and South America affected the food and farming of the Maya, Aztec, and Inca civilizations.
- Make connections between the diets of historic cultures and foods we eat today.

Assessments

During this lesson, students will:

- Identify the agricultural techniques used by the Maya, Aztecs, and Incas by name, and use the visual aid to explain the meaning of each term.
- Explain what can be deduced about the geography and terrain of each civilization based on the agricultural techniques they used.
- Recognize how foods that originated in the Americas are prepared and eaten in modern times.

Materials

FOR THE OPENING CIRCLE

- ☑ Cabbage Slaw recipe
- ☑ Ingredients and tools for demonstration
- ☑ Visual aid

INGREDIENTS

- ☑ Queso fresco

FOR THE TORTILLAS

- ☑ Masa (made from masa harina or ground fresh nixtamalized corn)
- ☑ Water
- ☑ Salt

FOR THE BEANS

- ☑ Cooked beans
- ☑ Variety of spices (such as ancho chile powder, New Mexico chile powder, paprika, ground cumin, ground coriander)
- ☑ Salt

FOR THE CABBAGE SLAW

- ☑ Purple cabbage
- ☑ Green or Savoy cabbage
- ☑ Scallions
- ☑ Cilantro
- ☑ Jalapeños
- ☑ Lime
- ☑ Salt

FOR THE ROASTED SQUASH

- ☑ Assorted winter squash
- ☑ Olive oil
- ☑ Salt and pepper

TOOLS

FOR THE TORTILLAS

- ☑ Mixing bowl
- ☑ Tortilla press (with plastic sheet to prevent sticking)
- ☑ Offset spatula

FOR THE BEANS

- ☑ Heavy-bottomed pot
- ☑ Wooden spoon

FOR THE CABBAGE SLAW

- ☑ Mixing bowl
- ☑ Reamer
- ☑ Chef's knives
- ☑ Paring knives
- ☑ Cutting boards
- ☑ Measuring spoons

FOR THE ROASTED SQUASH

- ☑ Sheet pan
- ☑ Parchment paper
- ☑ Mixing bowl
- ☑ Oven mitts

EQUIPMENT

- ☑ Stove
- ☑ Oven
- ☑ Electric griddle

BEFORE YOU BEGIN

- ☑ Collect all the tools and ingredients, and distribute them to the tables.
- ☑ Gather supplies for the Chef Meeting.
- ☑ Create the visual aid.
- ☑ Create the Roasting instructions.
- ☑ Copy the Cabbage Slaw recipe to hand out.
- ☑ Soak and cook the beans.
- ☑ Prepare the tortilla dough.
- ☑ Preheat the oven.
- ☑ Preheat the griddle.

Procedures

1 AT THE CHEF MEETING

1. Welcome students and introduce the recipe for the day: Three Sisters Tacos. Today we'll also be looking back in time at three of the major civilizations of the Americas—the Maya, Aztec, and Inca.
2. The Maya, Aztec, and Inca civilizations were not the only major ancient American civilizations, but they were three very important, powerful, and influential civilizations of their times. Often when one thinks of power it is easy to think only of brute strength. And each of these civilizations did indeed conquer other civilizations and have armies. But what really allowed them to be so powerful was they were masterful at growing food—they were excellent farmers.
3. In fact, about 70% of the foods we eat today originated in the Americas, many of them first domesticated and cultivated by the Aztec, Inca, or Maya people. Today we're going to learn about some of the agricultural techniques they used.
4. Ask students if there is anyone who knows about the three sisters. Give students a clue that the three sisters are not people, but three types of foods.
5. The three sisters are beans, corn, and squash. They are called the three sisters because they grow together and support each other. Prompt students to think of the corn they have seen growing in the garden. How does a corn plant look? It is tall. How does a bean plant grow? It grows as a vine. When corn and beans grow together, what do you think happens? The corn supports the bean by giving it a place to climb, and the bean fixes nitrogen in the soil, enriching it for the corn and squash. What does a squash plant look like? It has large leaves and covers a lot of ground. Why would that help the corn and beans? It shades out weeds, keeps nibbling creatures away, and prevents moisture in the soil from evaporating. This is how the three sisters support one another.
6. Companion planting the three sisters was one agricultural technique that people all over the Americas used.
7. Prompt students to reference the poster to identify an agricultural technique that both the Maya and the Inca used: terraces. Ask students to use the poster to define "terrace" and explain the benefits of terracing. Ask students: What does the fact that both the Maya and Inca used terracing to grow food tell you about the places they lived? They lived and farmed on mountainous terrain.
8. Prompt students to reference the poster to identify an agricultural technique that both the Maya and Aztec used: canals. Ask students to use the poster to define "canal" and explain the benefits of building canals. Ask students: What does the fact that both the Maya and Aztec built canals tell you about the places they lived? They were both marshy, so they used canals to drain the places that were too wet, bring water to places that were too dry, and extend the amount of land suitable for agriculture.

9. Ask students to identify the one agricultural technique that appears on the poster that hasn't yet been discussed: chinampas. Ask students to use the poster to define "chinampas" and describe how chinampas might have been made. Chinampas were made by driving posts into the bottom of the lake and attaching tightly woven nets in between the posts, then filling the underwater enclosures with rocks, sediment, and soil. Tell students that the beds formed on top of the chinampas were so fertile that Aztec farmers could grow up to seven crops per year in a single bed! This means that just a few weeks after planting a seed, a crop would be ready for harvest. Compare this to the two or three crops that grow per year in the ESY garden for perspective. The Aztec capital, Tenochtitlan, was built in the middle of Lake Texcoco. Modern-day Mexico City was built directly on top of the Aztec capital, and ancient chinampas can still be found today around Mexico City.
10. Today as we make our Three Sisters Tacos, reflect on the fact that if it weren't for the farming expertise of these three civilizations, many of the foods we eat and love today might not exist, including the three sisters.
11. Break into table groups.

2 AT THE TABLE

1. Small-group check-in: Which of the three sisters is your favorite to eat? Which of the three sisters do you eat most often? What is your favorite kind of flatbread (tortillas, pancakes, pita, lavash, etc.)?
2. Review the recipes and assign cooking jobs.
3. Prepare the recipes and set the table.
4. Eat.
5. Clean up.

3 AT THE CLOSING CIRCLE

1. Ask students to rate the food using their fingers on a scale of 1 to 5. If there is time, ask students to share ideas of ingredients they might add to their tacos if they were to prepare them at home.

Vocabulary

- Companion planting
- Terraces
- Canals
- Irrigation
- Chinampas
- Reamer

Teaching Notes

Visual aid: We find that this Chef Meeting is most successful and engages the widest variety of students when we really prompt the students to use the visual aid.

"Wait, where's the meat?": The language of "slaw" and "taco" can evoke specific expectations for students that don't match the recipes we use in this lesson. We like to acknowledge that directly when it comes up and flip it to a positive: "Isn't it kind of cool? You can make a taco with anything! Can you think of anything you couldn't put in a taco? If you were going to make a dessert taco, what would you put in it?"

"Floating gardens": It can be a common misconception that Aztec chinampas were floating. They were in fact human-made islands built up in bodies of water, so they were connected to the lake or river bottom and not just floating on top of the water.

Peeling the squash: Winter squash can be very difficult to peel. Depending on the skill level of the students, we may pre-peel the squash, or we may demonstrate how to use a paring knife to peel. With the paring knife, we emphasize how gently sawing, not just pushing straight down, works the best.

Smelling the squash: Students often really enjoy smelling the winter squash and notice that the odor is similar to watermelon or cucumbers. If you use a variety of squash, this comparison can be really fun.

Cutting the squash: Cutting the winter squash is a good opportunity to show students how to use their body weight to cut tough vegetables. Depending on how hard the specific squash we're using for a lesson is, sometimes we pre-cut the squash in slices so students need only to dice it.

Cutting for even cooking: Making roasted squash is a good opportunity for students to practice cutting squash pieces into consistent sizes so that they cook at the same rate. We often tell our students that one trick is to make the initial slices the same width.

Seasoning the squash: When seasoning the squash to roast, we tell our students to use enough oil so that every piece of squash is shiny all over, but there's no oil pooling at the bottom of the bowl. We encourage them to taste for salt.

Scallions vs. red onions: Either scallions or red onions may be used in the cabbage slaw. We generally prefer to use scallions because they are easier on the students' eyes.

Salting the cabbage: Slicing the cabbage as thinly as possible and salting it early yield the most delicious results. Salt helps to draw excess water out of the cabbage, making it softer and allowing it to more fully take on the flavor of the dressing.

Cilantro stems: We like to chop both the stems and the leaves to add to the slaw. We find the stems have a really delicious sweet flavor.

"Winter salsa": Calling the cabbage salad a "slaw" can evoke specific expectations for students (i.e., sweet mayonnaise dressing). We took to likening the cabbage slaw to a "winter salsa," explaining that if it were summer, we'd be making a salsa with tomatoes (pico de gallo), but because tomatoes weren't in season we were using cabbage instead. This

approach tended to drum up a lot of enthusiasm for the slaw and encouraged a number of students who had previously been skeptical to try it.

Bean and masa amounts: We used 4 cups of cooked beans and made masa from about 3½ cups of masa harina for each group of 10-12 people (about 4 cups dried beans and 10½ cups masa harina for a class of 30).

Seasoning the beans: Make sure students heat the beans as they season them. The spices will taste different as they warm and as they have time to simmer. Encourage students to taste the spices while the beans are heating before they decide which ones and how much of each spice they want to add.

Spicy ingredients: Both the beans and slaw have the option of going spicy in this lesson. We find this is a good opportunity for groups to practice coming to a consensus about seasoning. We often remind them that you can always add spice but not take it away, and that those in charge of making the beans or slaw have the responsibility of cooking for the whole group.

Designating tortilla masters: Making the tortillas is often a very popular job. We like to give everyone a chance to make a couple, and find that this is an ideal opportunity to have students who have already made a few teach those who are just starting out.

Tortilla pressing tips: We use wooden tortilla presses and line each side of the press with a piece of plastic to prevent the masa from sticking to the wood. We always show students how to gently peel the plastic off of the pressed tortillas instead of the other way around to keep the raw tortillas from ripping.

Cooking the tortillas: Patience is key in getting the best product here. Wait for the middle of the tortilla to steam and for the edges to curl up before attempting to flip. Flip too early, and you risk ending up with tortilla scramble. We keep the tortillas wrapped in tea towel after taking them off the griddle, which keeps them warm and moist.

Hot sauces: We always have a variety of hot sauces available. Different students identify with different hot sauces, and we find students are excited to see their culture represented in the space. It can be a great conversation starter to ask students which hot sauce is their favorite, or whether they like to eat different kinds with different foods.

Connections to Standards

COMMON CORE

RH.6-8.7. Integrate visual information with other information in print and digital texts.

RST.6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

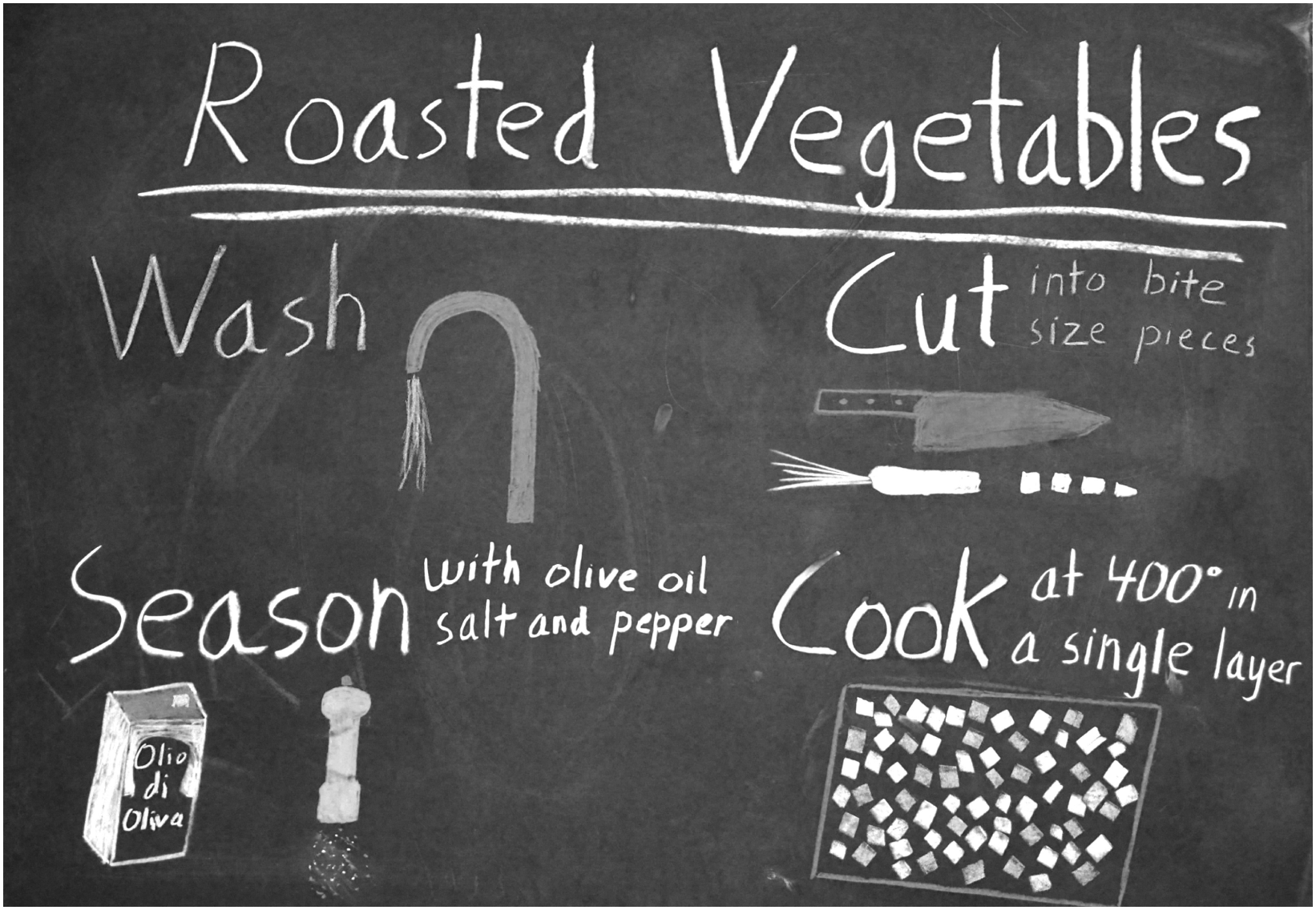
CALIFORNIA STATE, HISTORY–SOCIAL SCIENCE, GRADE 7

7.7.1 Study the locations, landforms, and climates of Mexico, Central America, and South America and their effects on Mayan, Aztec, and Incan economies, trade, and development on urban societies.

7.7.5 Describe the Meso-American achievements in astronomy and mathematics, including the development of the calendar and the Meso-American knowledge of seasonal changes to the civilizations' agricultural systems.

Contributors

All lessons at the Edible Schoolyard Berkeley are a collaboration between the teachers and staff of the Edible Schoolyard and Martin Luther King Jr. Middle School.


Roasted Vegetables
Wash
Cut into bite size pieces
Season with olive oil salt and pepper
Cook at 400° in a single layer
Olio di Oliva

RED CABBAGE COLESLAW

- 1/3 red onion, diced small
- 1-2 limes, juiced
- 1 small red cabbage, thinly shredded
- 1 jalapeño, diced small
- 1/3 bunch cilantro, chopped

Place the red onion in a small bowl and cover it with lime juice. Add a pinch of salt, stir and let sit for about 10 minutes. In a medium bowl, combine the shredded cabbage, diced jalapeño and chopped cilantro. Stir in the onion and lime juice. Add salt and pepper to taste.

Pico de gallo Salsa

1/2 bunch of cilantro, chopped (leaves and stems)

3 medium tomatoes, chopped

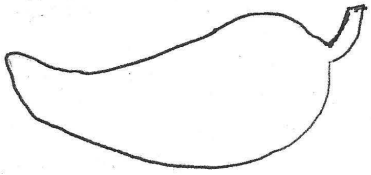
1 1/2 onion, chopped

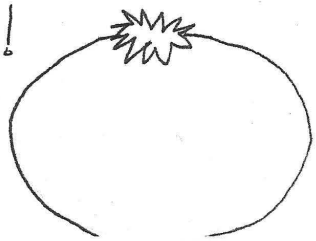
1 jalapeno, chopped (optinal)

juice of 1/2 a lime

salt and pepper to taste

In small bowl, combine cilantro, tomatoes, onion, jalapeno, limejuice, salt and pepper and mix well and enjoy !!!





“Cooking in the Garden” Tool Kit Worksheet

Important Tools	Approx. Price	Quantity	Where can I get this tool?
Paring knife	$5		
Cutting board or mat	$10		
Box grater	$8		
Peeler	$3		
Juicer	$10		
Set of mixing bowls	$20		
Mortar and pestle	$25		
Spatula	$5		
Wooden spoon	$3		
Whisk	$5		
Measuring spoons	$2		
Measuring cups	$4		
Storage bins	$20		
Dish towel	$2		
Bench scraper	$2		
Zester	$7		
Microplane	$12		
Garlic peeler	$7		
Wavy knife	$7		
Butane burner	$20		
Induction burner	$100		
Sauce pan	$20		
Sauté pan or skillet	$20		
Stock pot	$40		
Pot holder	$5		

Pot holder	$5		
Bus tub	$8		
Bin for compost	$10		
Bucket	$5		

Questions to consider when building your tool kit:
How many students will be cooking at one time?

What tools are age-appropriate for my students?

Do I have somewhere to clean up on site?

How will I store and transport my supplies?

What is the focus of your program?

Are there any stores that might make in kind donations?

Other items to consider:

- Cooking with heat options. Induction, butane cassette, propane.
- Restaurant supply stores are a good, often inexpensive, option.
- Ask for in kind donations from kitchen stores.
- You may have to shop around and purchase from many places to get different tools that you are happy with.
- Storing and transporting tools-Toolboxes, carts, totes.
- Look for durability and versatility. Quality over quantity.
- You can buy just a couple tools and see which are most often in use before purchasing larger quantities.

“Cooking In The Garden”
Example Tool Kit Inventory

Tools	Quantity
Paring knife	5
Cutting board	5
Cutting mat	3
Box grater	1
Bench scraper	1
Peeler	3
Juicer	1
Set of mixing bowls	1
Mortar and pestle	1
Wooden spoon	1
Whisk	1
Measuring spoons	1
Measuring cups	1
Dish towels	5
Colander	1
Platter	1
Scissors	1
Scrub brush	1
Tongs	1
Compost bin	1


WHAT FACTORS IMPACT YOUR FOOD CHOICES?
HEALTH & NUTRITION
ENVIRONMENT
DEBATE PLATE
LABOR & JUSTICE
COST & ACCESS

Debate Plate Overview

In this six-part 8th grade humanities lesson series, students discuss and reflect on the factors and considerations that influence personal food choices; consider the impacts of food choices on personal well-being, the environment, and other people; and debate the questions, complications, and paradoxes associated with the what's, how's, and why's of food choices.

Introduction to Food Systems and Choices

IN THE ACADEMIC CLASSROOM

Students read and discuss an article about the Mandela Foods Cooperative (MFC), a small community-run grocery store in West Oakland. Using MFC as a case study, students analyze and discuss the intersections of health, environment, labor, economic inequality, and food access. h issues of health, economic status, and food access intersect

Health & Nutrition

Students make red lentil stew and spiced cabbage slaw and reflect on how their own understandings of health and nutrition impact their relationship to food and food choices. At the table, they debate whether or not the government should regulate what kinds of food may be served for school lunch based on health and nutrition guidelines. If so, how should those health and nutrition guidelines be decided and who should create them?

Environment

Students make frittata and salad with their choice of salad dressing, and discuss the relationship between food choices and the environment with a specific focus on water use and food waste. At the table, students share stories of people in their lives who practice thrift or avoid waste.

Labor & Justice

IN THE ACADEMIC CLASSROOM

Students watch a short video about the 2010 fight by the Coalition of Immo
kalee workers for a penny more per
pound of tomatoes picked, and read an article that describes where consumer food dollars go in the food system. Students make posters that synthesize the information, and discuss the roles consumers, government

Debate Plate Overview (continued)

Labor & Justice

Students make broccoli macaroni and cheese and lemonade, and compare the proportion of consumer dollars that go to different players in the food system for from-scratch and boxed macaroni and cheese options. Students analyze and discuss the differences between mac and cheese options, and debate the role consumer responsibility should play in food choices.

Cost & Access

Students make vegetarian chili and cornbread, consider the many forms of food access, and discuss how cost and access impact food choices. Students debate whether access to food that is good for you, good for the environment, and good for other people currently is a right, privilege, or responsibility, and what it should be.

Food Choice Consideration Cards

Description

The food choice consideration cards are one of the resources we use in our 8th grade Debate Plate lesson series to prompt self-reflection, critical thought and meaningful conversations. They are small, colorful cards that have a consideration someone might have when choosing what to eat (ex. Taste, Cost etc.) on one side, and a description of that consideration on the back (ex. "How a food tastes", "How much a food costs" etc.). There are 22 cards in each set.

During the Debate Plate lesson series, students have the opportunity to arrange these cards in order of their own priorities when making food choices, and share their results with peers and teachers. This activity is done at any point during the class when a student has down-time, and may be done independently, in small groups, or as a teacher-facilitated activity with the full group.

Categories

The cards in our deck are:

- **Animal Welfare** – how a food or the processes involved in making it available to you impact animals
- **Appearance** – how a food looks
- **Availability** – how readily available a food is to you – how easy or difficult it is for you to get a hold of a certain food
- **Body Image** – the mental picture or image of your own body, and your thoughts, feelings, and emotions related to that picture or image rainstorm inputs that go into making food available for consumption.
- **Cost** – how cheap or expensive a food is
- **Culture or Identity** – what a food represents to you, or its connection to your culture or identity
- **Environment** – how the food or the processes involved in making it available to you impact the environment.
- **Ease or Convenience** – how easy and convenient it is to access or prepare a food, or the time and labor required to do so
- **Habit** – what you're used to eating (or not eating) – your familiarity or routines with a food
- **Health & Nutrition** – how a food impacts your health
- **Interpersonal Relationships** – when you make decisions about what to eat based on the desires, needs, recommendations or preferences of others▸ Culture or identity – what a food represents to you, or its connection to your culture or identity

Categories (continued)

- **Justice & Labor** – the wages, working conditions and rights of the people involved in growing, processing, distributing or preparing a food
- **Mood –** how your mood impacts what you want to eat (eg. feeling down and wanting to eat something comforting from your childhood)
- **Past Experience** – the memories or nostalgia you associate with a food or eating experience
- **Availability** – how readily available a food is to you – how easy or difficult it is for you to get a hold of a certain food
- **Smell** – how a food smell
- **Sound** – the sound a food makes while you're preparing or eating it (eg. the crunch of biting a carrot or squeak of chewing certain cheeses)
- **Taste** – how a food tastes
- **Texture** – the physical feel of a food
- **Time of Day** – how the time of day impacts what you eat
- **Weather** – how the weather impacts what you eat (eg. hot soup on a cold day)

Example Prompts

Prompts or questions we may ask students to consider:

1: What are your priorities?

2: What are different situations in which your priorities change? How?

3: Choose a friend or family member who you think has different priorities from you? What do you think their priorities are?

4: What were your priorities in elementary school? How do you think they'll change as an adult?

5: How do you think Berkeley School District organizes their priorities for school lunch? If you were in charge of creating school lunch for the Berkeley Unified School District, how would you order these considerations?

6: You're babysitting someone younger than you and you're responsible for making them dinner. What would be your order of considerations?

7: You're on a first date and you're cooking something for your date. What would be your considerations?

today we are tasting: _____

ENGAGE YOUR SENSES!

VARIETY	What does it LOOK like?	How does it SMELL?	What is the TEXTURE? (How does it feel when you chew?)	What does it TASTE like?

My favorite variety was _____ because: _____

_____

Life is like a box of Chocolates...

today we are tasting: _____

VARIETY	SENSORY DESCRIPTION (smell, taste, texture)	A SIMILE or METAPHOR that captures or illuminates the experience

today we are tasting: _____

VARIETY	DESCRIPTIVE WORD	SYNONYM for your descriptive word	ANTONYM for your descriptive word

MY favorite variety was _____ because it was _____

_____ and it was NOT _____.

today we are tasting: _____

OBSERVE THE PHYSICAL TRAITS OF EACH VARIETY TO COMPLETE THE TABLE

VARIETY	SIZE	COLOR	FLAVOR	THE TRAIT I WOULD SELECT FOR:

Use your favorite traits of each variety to create your own unique cultivar! My new cultivar would be called: _____

and it would have these traits: _____

_____

today we are tasting: _____

OBSERVE THE PHYSICAL TRAITS OF EACH VARIETY TO COMPLETE THE TABLE

VARIETY	SIZE	COLOR	FLAVOR	THE TRAIT I WOULD SELECT FOR:

Use your favorite traits of each variety to create your own unique cultivar! My new cultivar would be called: _____

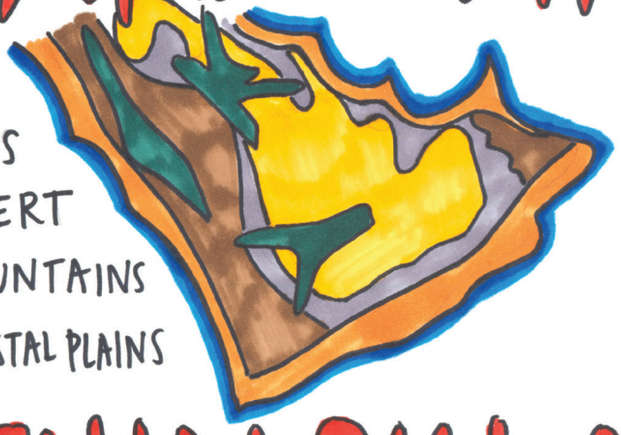
and it would have these traits: _____

_____

KALE PESTO & RICOTTA: A PH LAB IN THE KITCHEN

FIND THIS LESSON ONLINE: EDIBLESCHOOLYARD.ORG/PHLAB

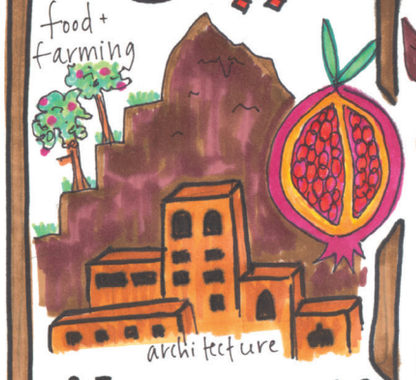
the ARABIAN PENINSULA



the CROSSROADS of trade

How do GEOGRAPHY and CLIMATE influence FOOD and CULTURE?

الجبال

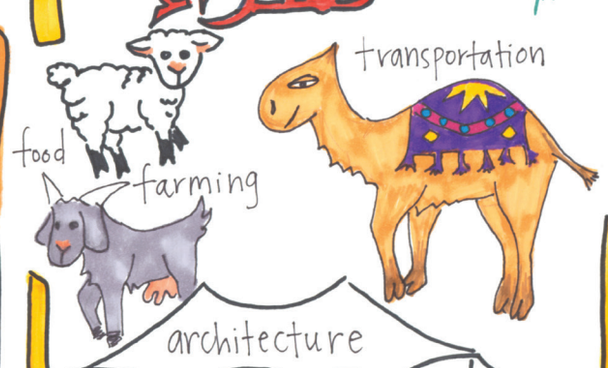


MOUNTAINS

ساحل

the COASTAL PLAINS

صحراء



DESERT

واحة

the OASIS

the ARABIAN PENINSULA

An Edible Schoolyard Lesson

MIDDLE EASTERN MEZE PLATTER

For the Hummus

2 cups cooked garbanzo beans
1 clove garlic
2 tablespoons tahini
2 tablespoons lemon juice
2 tablespoons parsley, choppped
Salt and pepper

Combine garbanzo beans, garlic, tahini, lemon juice, and parsley and blend until smooth with an immersion blender or food processor. Add salt and pepper to taste and add water to thin, as needed. Serve with pita or fresh vegetables.

For the Pita Bread

1 cup organic whole wheat flour
1½ cups organic all purpose flour
1 teaspoon yeast (½ package)
1 tablespoon sugar
1 teaspoon salt
2 teaspoons olive oil
1 egg
1 cup water

Combine ingredients in a mixing bowl and knead until well mixed. Let stand one hour. Heat oven to 550° or broil. Roll the dough into 1½-inch balls. You will get about 15. Press or roll each ball into a very flat disk. Place on a cookie sheet and bake for 4–5 minutes until lightly toasted.

For the Yogurt Sauce

¾ cup plain yogurt
½ cup radish, carrot, or cucumber, grated
1–2 cloves garlic, pounded to a paste with mortar and pestle
15 mint leaves, chopped
Pinch of salt

Pour yogurt into medium mixing bowl. Mix in grated radish, carrot, or cucumber. Mix in pounded garlic and chopped mint leaves. Salt to taste.

Serves 10 students as a tasting portion

A Middle Eastern meze platter offers a taste of the four climatic regions of the Arabian Peninsula and a chance to learn how geography and agriculture influenced the lives of people from each region.

WHAT ARE STUDENTS LEARNING?

Communication

Students work in small teams to complete a multi-dish meal, while also coordinating timing and dividing responsibility overall.

Sustainability

Students learn how landscapes and weather patterns determine agricultural practices and regional diets. The interdependence of people and nature is exemplified by the climate-dependent crop the date palm, which nomadic people of the Arabian Peninsula used to feed, clothe and shelter themselves.

Cooking Skills

Students learn to safely operate and clean an immersion blender, and how to prepare crudités, a simple snack of raw sliced vegetables.

Nourishment

Students delight in making organic hummus—a popular healthy snack that many eat at home but have never made themselves—and baking organic whole wheat pita bread with flour grown and ground by students in Edible Schoolyard garden classes.

Academics

Students discuss the exchanges of plants, animals, technology, culture, and ideas among Europe, Africa, Asia, and the Americas in the fifteenth and sixteenth centuries.

This fulfills: History & Social Science content standards; Common Core State Standards (ELA) for collaborative discussion, integrating information in different formats, speaking and listening; Health & Wellness standards for making healthy food choices, safe food handling, and preparing nutritious foods.

THE EDIBLE SCHOOLYARD PROJECT

To download printable copies of this placemat and full lesson plan, visit edibleschoolyard.org/mezeplatter

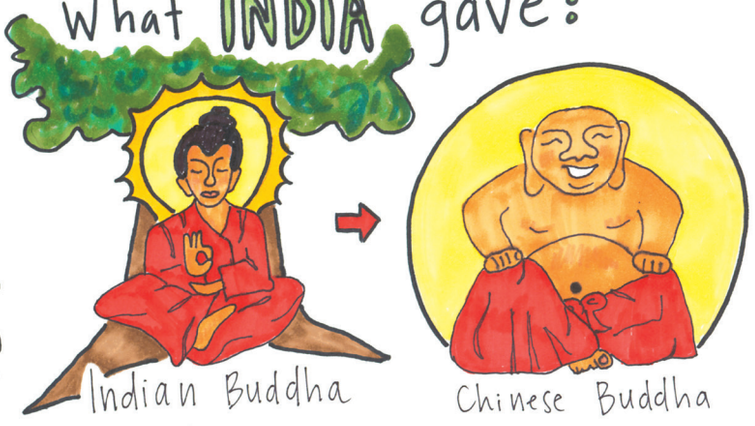
INDIA and the Silk Road

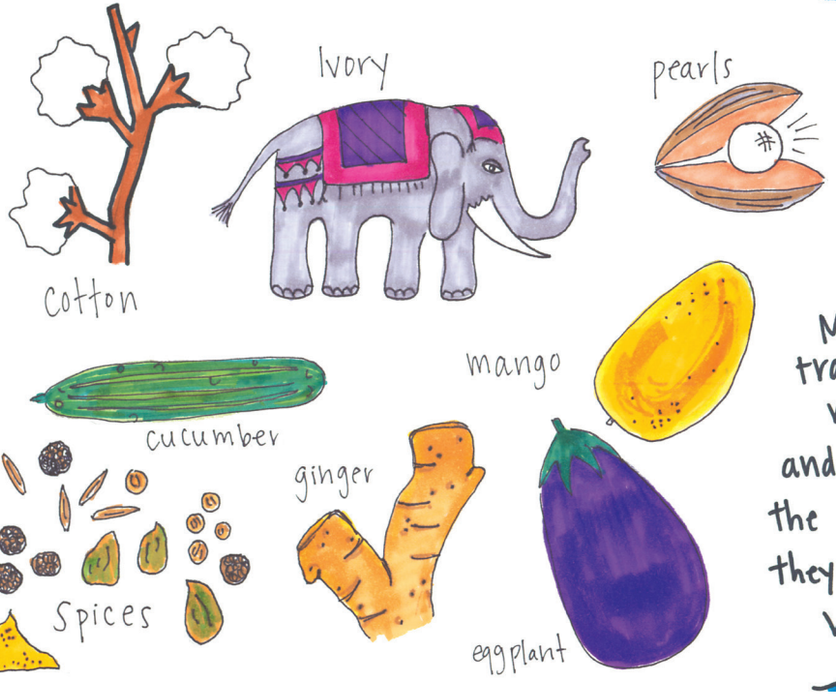
What INDIA gave:

IDEAS

GOODS

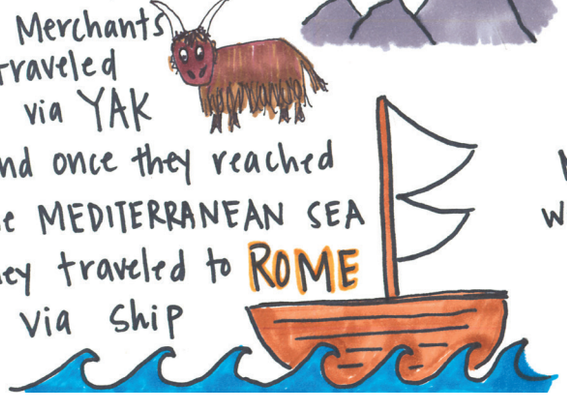
FOODS





The WESTERN Silk Road connected KASHGAR to ROME and EGYPT through the PAMIR MOUNTAINS.

Merchants traveled via YAK and once they reached the MEDITERRANEAN SEA they traveled to ROME via ship



The EASTERN Silk Road connected KASHGAR to LUOYANG (China's capital)

Merchants traveled through the TAKLIMAKAN DESERT via CAMEL

Merchants carts were searched on the way out of CHINA to prevent SILK WORM SMUGGLING

INDIA and the Silk Road

An Edible Schoolyard Lesson

INDIAN VEGETABLE CURRY

For the Vegetable Curry
2 tablespoons olive oil
1 onion, peeled and diced
2 tablespoons curry spice mix
4 carrots, peeled and sliced
6 potatoes, diced
1 cup cooked garbanzo beans
2 cups coconut milk
4 cups vegetable stock
1 bunch of greens
(chard, kale, collards)
Salt and pepper to taste

For the Curry Spice Mix
½ tablespoon coriander seeds
2 cardamom pods
½ tablespoon mustard seeds
⅛ teaspoon black peppercorns
½ tablespoon cumin seeds
¼ teaspoon chili flakes
½ tablespoon ground turmeric

Other Ingredients
Brown basmati Rice

Directions
In a dry skillet over medium high heat, lightly toast the coriander, cardamom, mustard seeds, and cumin until fragrant (about 30 seconds).

Combine the toasted spices in a mortar and pestle. Add the chili flakes, peppercorns, and turmeric. Grind to a powder. Set aside.

Heat the olive oil in a large pot and add the diced onions and curry spice mix. Sautée over medium heat for 3–5 minutes.

Add the carrots, potatoes, garbanzo beans, and coconut milk. Bring to a simmer and add the vegetable stock. Simmer until the potatoes are tender.

Add the greens, let them wilt, and season with salt and freshly ground pepper. Serve over brown basmati rice.

Serves 10 students as a tasting portion

Traveling along the Silk Road, students stop in Kashgar to make a Vegetable Curry and discover the ideas, good, and foods that people there shared with other regions along the major trans-Eurasian trade route.

WHAT ARE STUDENTS LEARNING?

Communication
With a focus on spices, students discuss their own preferences and negotiate with others to determine the best curry mix for the group.

Sustainability
With a focus on climate and geography, students explore which particular crops can be grown in different regions.

Cooking Skills
Students learn to toast and grind fresh spices to produce more intense flavors, and that cooking spices in oil can help extract and further intensify those flavors.

Nourishment
Students devour a flavorful, satisfying, healthful, and organic vegetable curry prepared with freshly toasted and ground spices served with steamed brown rice.

Academics
Students study the significance of the trans-Eurasian "silk roads" in the period of the Han Dynasty and Roman Empire.

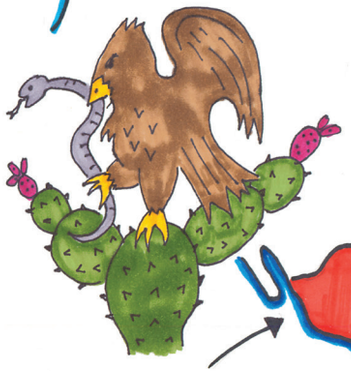
This fulfills: History & Social Science content standards; Common Core State Standards (ELA) for integrating information presented in different formats, following a multistep procedure, integrating quantitative or technical information, collaborative discussion, speaking and listening, and language.

THE EDIBLE SCHOOLYARD PROJECT

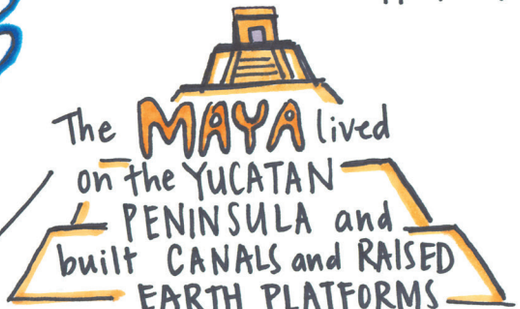
To download printable copies of this placemat and full lesson plan, visit edibleschoolyard.org/curry

Three CIVILIZATIONS of the AMERICAS

How does GEOGRAPHY influence AGRICULTURE?

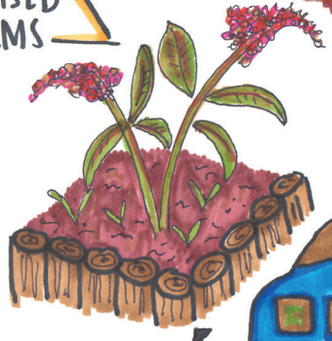


The **AZTEC** lived on LAKE TEXCOCO and built CHINAMPAS and CANALS

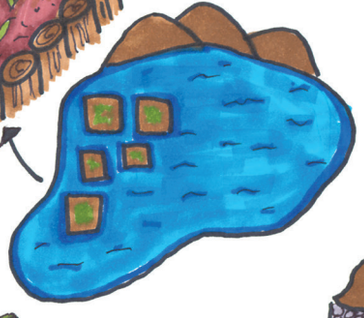


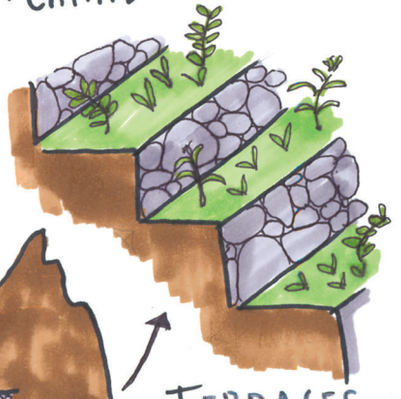
The **MAYA** lived on the YUCATAN PENINSULA and built CANALS and RAISED EARTH PLATFORMS

RAISED EARTH PLATFORMS + CANALS



CHINAMPAS





TERRACES

The **INCA** lived in the ANDES MOUNTAINS and built TERRACES on the steep slopes

maize

Chili

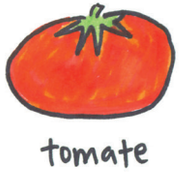
miel

Calabaza

aguacate

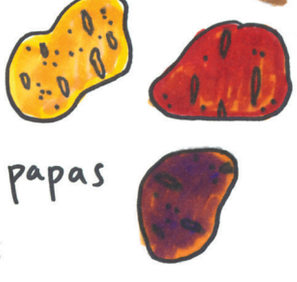
amaranto

cacao



tomate

frijoles



papas

three CIVILIZATIONS of the AMERICAS

An Edible Schoolyard Lesson

CORN TORTILLAS

Ingredients
3 cups masa harina
½ teaspoon salt
2¼ cups warm water

Directions
In a large mixing bowl, combine masa harina, salt, and warm water. Knead the dough by hand until it is smooth and no longer sticky. If the dough feels dry and crumbly, add water, one tablespoon at a time. If it feels sticky, add masa harina, one tablespoon at a time.

Roll the dough into 1-inch balls. You will get around 25. Let sit while you heat a dry cast iron griddle or skillet over medium heat.

Cut two pieces of parchment paper and line the inside surfaces of the tortilla press. Place one dough ball in the center of the press, close it, and press gently. Open the press, peel the tortilla off the liner, and place on skillet.

Cook tortillas for 1–2 minutes per side, flipping once. Stack cooked tortillas and wrap in a clean towel to keep them warm and soft.

Serves 10 students as a tasting portion

Corn was a staple crop of the Aztecs who devoted much of their time to processing whole food crops for eating—in the case of corn, a process known as nixtamalization. Students compare the production and taste of corn tortillas made from freshly ground and nixtamalized dent corn with ones made with commercially processed masa harina, a relatively recent innovation.

WHAT ARE STUDENTS LEARNING?

Communication
Students discuss pros and cons of three methods of corn processing, drawing on their personal experience to formulate and defend opinions in a respectful way.

Sustainability
Students discuss sustainability and labor in the food system by comparing different methods of corn processing throughout history.

Cooking Skills
By trying three different methods of grinding corn by hand, students learn how to prepare masa before using a tortilla press to form fresh tortillas, and then practice cooking them on a griddle.

Nourishment
Students taste and compare the qualities of nixtamalized corn and non-nixtamalized corn and eat freshly made organic corn tortillas.

Academics
Students compare and contrast the geographic, political, economic, religious, and social structures of the Meso-American and Andean civilizations and study the roles of people in each society.

This fulfills: History & Social Science content standards; Common Core State Standards (ELA): following a multistep procedure, collaborative discussion, and speaking and listening; Health & Wellness standards: identifying nutrients, differentiating between health-promoting diets and ones linked to disease, and preparing nutritious food.

THE EDIBLE SCHOOLYARD PROJECT

To download printable copies of this placemat and full lesson plan, visit edibleschoolyard.org/tortillas

CHINA and RICE

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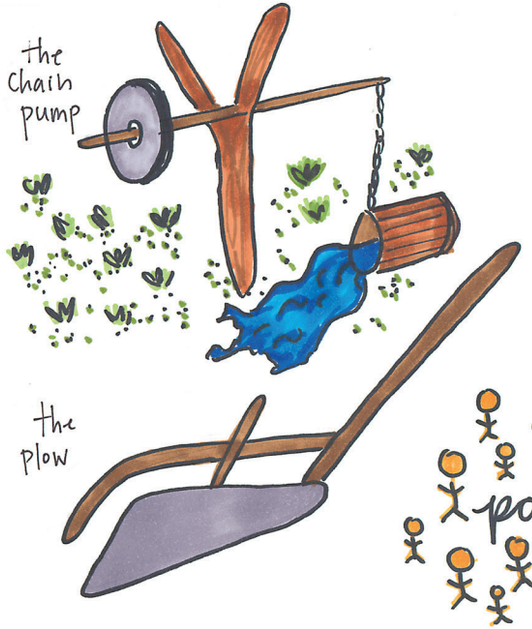
How do ADVANCES in AGRICULTURE shape CULTURE?

NEW TOOLS + a new VARIETY of QUICK GROWING RICE

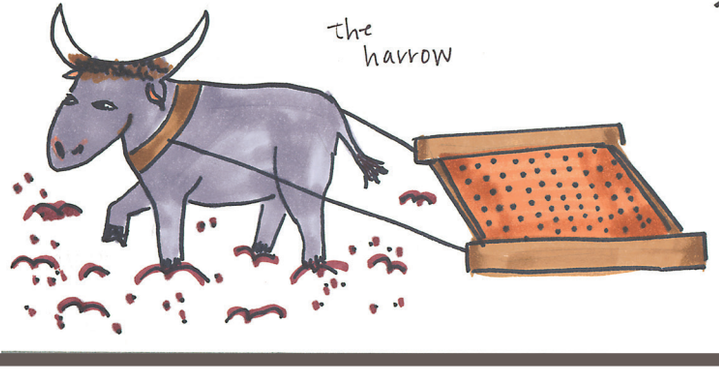
improved AGRICULTURE



RICE SURPLUS: an EXCESS of production

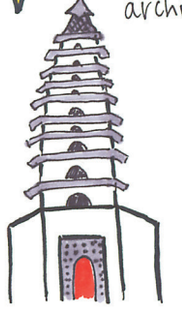
population GROWTH

TRADE and COMMERCE



URBANIZATION

CULTURE



CHINA and RICE

An Edible Schoolyard Lesson

VEGETABLE FRIED RICE

Ingredients
2 tablespoons olive oil
4 garlic cloves, peeled and minced
1 tablespoon fresh ginger, peeled and minced
5 cups assorted vegetables (bok choy, tatsoi, carrots, chard, scallions, celery, peas, squash), washed and chopped
5 cups cold cooked long grain brown rice
2 teaspoons toasted sesame oil
5 eggs lightly beaten
¼ cup soy sauce
Salt and pepper

Directions
In a large, heavy bottomed frying pan or wok, heat the olive oil over medium heat.

Add the garlic and ginger and cook for 30 seconds. Add the crunchy vegetables (carrots, celery, etc.) and sauté for about five minutes until cooked through but still a little crisp.

Add the leafy vegetables (bok choy, scallions, etc.) and cook for a few more minutes.

Add the rice and sesame oil, stirring to combine. When the rice is hot, add the eggs and soy sauce, cooking until the eggs are dry.

Season with salt and pepper.

Serves 10 students as a tasting portion

Vegetable Fried Rice takes students to Song Dynasty China, where innovations in agriculture produced a rice surplus, creating cultural, technological, and scientific developments that profoundly shaped that period of human history.

WHAT ARE STUDENTS LEARNING?

Communication
With a focus on seasoning and flavors, students advocate for their own preferences and account for others' to arrive at a solution that works for everyone at the table.

Sustainability
Students study the advantages of biodiversity and selecting for traits in crop varieties that respond well to particular growing conditions and methods, while ensuring sustainable production.

Cooking Skills
Students learn to cut vegetables into small, uniform pieces, that cutting on the bias increases surface area to speed cooking time, and to not overcrowd the wok, because high heat is essential to the flavor of the dish.

Nourishment
Students study how consistent and ample access to food in Song Dynasty China enabled major scientific and cultural development, and how a delicious, quick-to-cook organic vegetarian meal with readily available leftovers can support their own health and well-being.

Academics
Students study agricultural developments in Song Dynasty China.

This fulfills: History & Social Science content standards; Common Core State Standards for collaborative discussion, integrating information in different formats, speaking and listening, and language; and Health & Wellness standards for choosing healthy foods; safe food handling; and preparing nutritious foods.

THE EDIBLE SCHOOLYARD PROJECT

To download printable copies of this placemat and full lesson plan, visit edibleschoolyard.org/friedrice

Your mission: Redesign the school lunch experience ...for your partner. Start by gaining empathy.

1 Interview

8min (2 sessions x 4 minutes each)

Notes from your first interview

Switch roles & repeat Interview 1.

2 Dig deeper

8min (2 sessions x 4 minutes each)

Notes from your second interview

Switch roles & repeat Interview 2.

Reframe the problem.

3 Capture findings 3min

needs: things they are trying to do*
*use verbs

insights: new learnings about your partner's feelings/worldview to leverage in your design

4 Define problem statement 3min

_____
partner name/description

needs a way to _____
user's need

Surprisingly // because // but . . .
[circle one]

_____

_____
insight

d.

Ideate: generate alternatives to test.

5 Sketch at least 5 *radical* ways to meet your user's needs. 4min

write your problem statement above

6 Share your solutions & capture feedback. 8min (2 sessions x 4 minutes each)

Notes

Switch roles & repeat sharing.

Iterate based on feedback.

7 Reflect & generate a new solution. 3min

Sketch your big idea, note details if necessary!

d.

Build and test.

8 Build your solution.

Make something your partner can interact with!

[not here]

10min

9 Share your solution and get feedback.

✚ What worked...

▬ What could be improved...

? Questions...

! Ideas...

8min (2 sessions x 4 minutes each)

Understanding Organic Labels

WHAT DOES "ORGANIC" MEAN?

Organic food is produced without using harmful or toxic pesticides, sewage sludge or petroleum-based synthetic fertilizers, genetically modified organisms (GMOs), bioengineering, or ionizing radiation. Organic meat, poultry, eggs, and dairy products come from non-cloned animals that are given no antibiotics or growth hormones.

100% ORGANIC

- 100% organic ingredients
- Only organic processing aids used
- Absolutely no non-organic agricultural ingredients used (excluding water/salt)
- Must be certified and the certifying agency must be named on the label

EXAMPLE:
100% organic oatmeal

LOOK FOR THE LABELS:

AND/OR

ORGANIC

- 95-100% organic ingredients
- Up to 5% may be from a limited list of specific allowed non-organic ingredients and processing aids (e.g. vitamins, baking soda, citric acid, gelatin, pectin) approved by the USDA National Organic Program and the certifier
- Must be certified and the certifying agency must be named on the label

EXAMPLE:
Organic cereal

LOOK FOR THE LABELS:

AND/OR

MADE WITH ORGANIC INGREDIENTS

- At least 70% organic ingredients
- Up to 30% of the product can be non-organic agricultural ingredients (e.g. eggs, honey), or from a limited list of specific allowed nonagricultural additives approved by the USDA National Organic Program and the certifier
- May list up to three organic foods or food groups on label
- Must be certified and the certifying agency must be named on the label

EXAMPLE:
Cereal made with organic oats

LOOK FOR THE LABEL:

LESS THAN 70% ORGANIC INGREDIENTS

- Product is not required to be certified
- All products with less than 70% organic ingredients are in this category
- No restrictions on non-organic ingredients
- The word "organic" can only be listed in the ingredients panel

EXAMPLE:
Ingredients: Organic oats, organic raisins

Organic Standards and Certification

Founded in California more than 40 years ago, CCOF helped create the current USDA National Organic Program (NOP) regulations. The NOP requires that all foods labeled as "certified organic" must be grown and processed according to strict standards. Growers, handlers, retailers, restaurants, and any other operation marketing its products as organic must be inspected by a USDA-accredited third-party certifier, such as CCOF, to ensure that all the rules necessary to meet these standards are being followed.

The Benefits of Organic Certification

The presence of the USDA organic and/or CCOF seal on a product guarantees that the product has been grown, produced, inspected, and certified to be in compliance with federal organic regulations. The USDA organic seal represents to consumers that someone is working behind the scenes to guarantee that their food is safe and healthy. CCOF is happy to be that someone and we are proud of the role we play in protecting the integrity of organic for the consumer.

Beware of Other Labeling

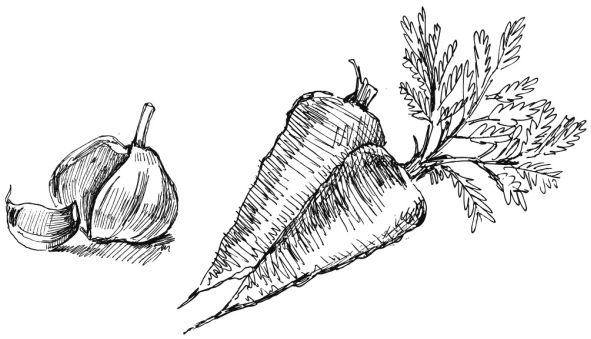
Food labeling can be misleading and confusing, which is why "certified organic" is an important choice for consumers. There are no federal standards for "Natural," "Local," and "Sustainable" claims. These products may include toxic pesticides, genetically modified organisms, or synthetic substances that are prohibited in organic production. "No Spray," "Pesticide Free," and "Residue Free" labels do not ensure that your food is organic. These claims may mean the edible part of a crop has not been sprayed with harmful chemicals, but synthetic fertilizers, insecticides, and fungicides could have been used to grow the food.

Organic is Non-GMO & More

ORGANIC IS NON-GMO & MORE

Buying food with the organic seal helps stop the spread of GMOs because it supports the farmers and companies that not only do not use GMOs, but who also proactively protect their certified products! Our "Non-GMO & More" seal helps highlight this benefit. Products that are not certified organic may contain GMOs, and without labeling requirements, consumers have no way of knowing. CCOF believes mandatory labeling of GMO seed, products grown from GMO seed or stock, or products made with ingredients and byproducts of GMO crops is necessary for farmer, supply chain, and consumer choice.

Top Reasons to Buy Organic



Organic farms support larger populations of beneficial organisms such as bees, other pollinators, and songbirds!

Choose Healthy, Tasty Food

Research from Newcastle University suggests that switching to a diet of organic fruit, vegetables, and cereals provides 20-40% more antioxidants. Additional studies indicate that organically grown food has higher amounts of vitamin C, magnesium, phosphorus, and iron; all nutrients vital for healthy, functioning bodies.

Protect Your Family's Health

Food choices you make now can have a major impact on your child's health. Children can be up to 164 times more sensitive than adults to at least eight widely used cancer-causing pesticides found in food. Exposure to toxic chemicals has been linked to the development of ADHD, allergies, asthma, and autism in children. Pesticides likewise have been implicated in birth defects, behavioral problems, nerve damage, and genetic mutations. Organic food is produced without the use of toxic pesticides and is a safer alternative for everyone.

Preserve the Environment

Pest management practices in organic farming protect wildlife, promote biodiversity, and work to improve and maintain native ecosystems. Organic farms support larger populations of beneficial organisms such as bees, other pollinators, and songbirds! Organic farming also centers on soil fertility–preserving the soil now and for future generations guarantees a sustainable food supply. These methods conserve water and protect our rivers from harmful chemical runoff that can decrease fish populations and create ocean dead zones.

Mitigate the Effects of Climate Change

Soil treated organically absorbs more carbon from the air and environment, and slows the process of global warming. Rodale Institute research has shown that organic practices can remove about 7,000 lbs of carbon dioxide from the air per year and sequester it in each acre of organic farmland. Imagine the impact that more acres of organic production could have on the health of the planet if consumers demanded more organic.

Remove Additional Antibiotics and Hormones from the Food Supply Chain

Organic meat, poultry, eggs, and dairy products come from animals that are not fed antibiotics or hormones. Resistance to antibiotics is on the rise and there is strong evidence to support the presence of antibiotics in our diet as playing a role in this trend. Organic practices avoid the overuse of antibiotics that have consequences for fighting illnesses.

Stop the Spread of GMOs

Genetically modified organisms (GMOs) are not allowed in organic production. A large and growing body of research shows that GMOs can be toxic, allergenic, and less nutritious than their natural counterparts. Studies indicate that GMOs can disrupt the ecosystem, damage vulnerable wild plant and animal populations, and harm biodiversity. Help stop the uncontrolled biological experiment by buying organic.

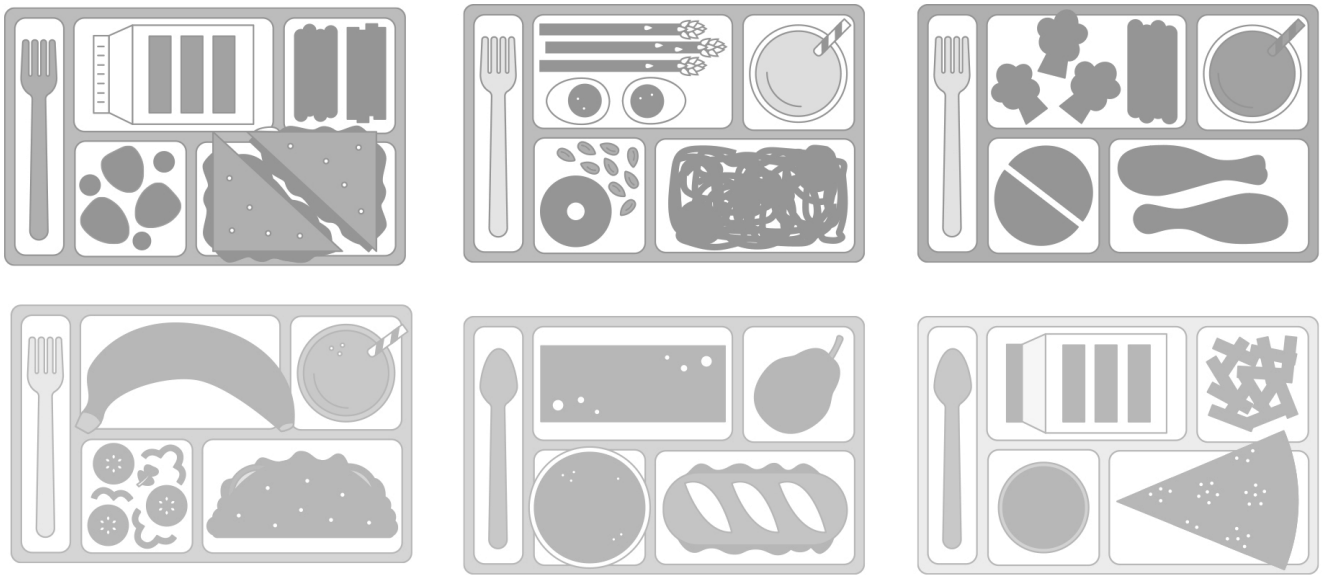
Build the National Economy

Organic farms have higher operating profits than the U.S. average for all farms. Data from the USDA shows that 78% of organic farms have plans to maintain or increase organic production levels over the next five years. In a time when farmland is decreasing and the family farmer is struggling, the organic sector continues to aid in revitalizing America's rural economy and national food system by providing jobs and preserving farmland.

Support a More Fair Food System

Although organic foods might seem more expensive than conventional foods, conventional food prices do not reflect hidden costs that all consumers must bear. Billions of dollars are given annually in federal subsidies to conventional commodity crop production. There are also costs associated with the regulation and testing of toxic pesticides. In the supermarket, a basket of conventionally grown produce may appear cheaper simply because it does not include all these hidden costs that are unknowingly borne by the taxpayer. On the other hand, the price of organic food reflects all the personal and wider public benefits of organic production methods.

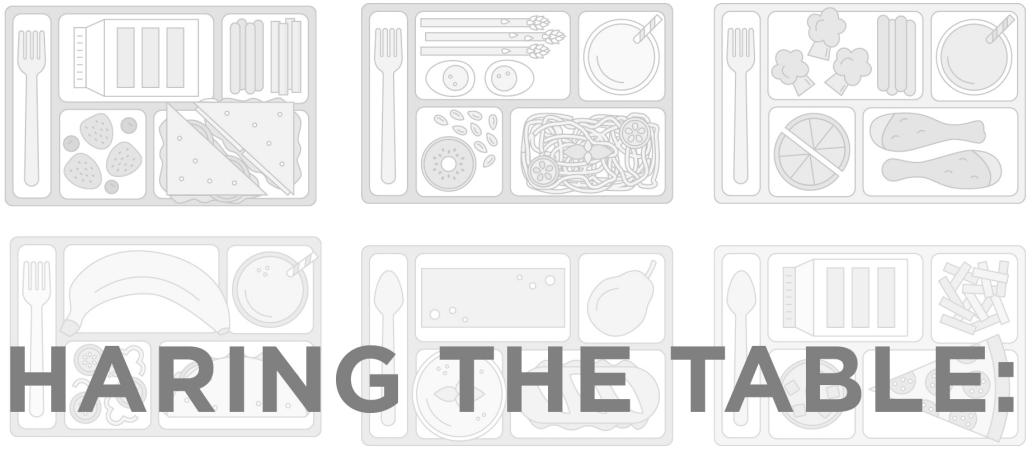
www.ccof.org | ccof@ccof.org | (831) 423-2263



SHARING THE TABLE:

A ROADMAP TO REDUCING AND RECOVERING SURPLUS FOOD IN SCHOOLS

THE CENTER FOR GREEN SCHOOLS



SHARING THE TABLE:

A ROADMAP TO REDUCING AND RECOVERING SURPLUS FOOD IN SCHOOLS

Nancy Deming

Lead Author
K-12 Sustainability Specialist at the Oakland Unified School District, the Central Contra Costa Solid Waste Authority's Recycle Smart Schools Program, and Alameda County Schools and District.

Janet Whited

Environmental Specialist at the San Diego Unified School District.

This resource is meant to be viewed on an internet-connected device. Resources within the document are hyperlinked.

INTRODUCTION

Food waste is a largely ignored and unspoken cause of climate change and may be an important avenue in the effort to reduce global greenhouse gas emissions. The Food and Agriculture Organization of the United Nations estimates that nearly one third of all food in the world is left uneaten, representing a striking 1.3 gigatonnes of wasted edible food. When food decays, it produces CO_2 and methane, a gas 25 times more potent than CO_2 in trapping heat in the atmosphere. It's been estimated that if food waste were a country, it would hold third place in a list of top emitters after the U.S. and China. In the U.S. alone, an estimated $1.24 billion in food is wasted annually in schools.

Two main goals: (1) to reduce the amount of food waste created by school meals and (2) to recover the inevitable surplus food to feed those in need in the community.

Through surplus food reduction and recovery programs, food waste can be dramatically reduced and surplus food can be provided to feed the community. School surplus food reduction and recovery programs function with two main goals: (1) to reduce the amount of food waste created by school meals and (2) to recover the inevitable surplus food to feed those in need in the community. Using various strategies, schools have a unique and important opportunity to reduce their food waste and recover surplus food created from school-provided meals.

ABOUT THIS GUIDE

Starting food reduction and recovery programs can seem daunting at first due to the number of steps to consider before beginning. However, with the right support and guidance, these programs can be successfully developed and implemented in schools with relatively low cost. This *Roadmap to Reducing and Recovering Surplus Food in Schools* serves as a guide for school stakeholders, using examples from efforts by the school districts in Oakland and San Diego, California to reduce and recover their surplus food from school meals. It focuses on best practices to save surplus food at school, as well as resources for school food waste reduction.

The Oakland Unified School District (Oakland USD) and San Diego Unified School District (San Diego USD) recognized the high value of the surplus food resources inherent in school meal programs and recognized a school's responsibility to reduce food waste by recovering surplus food to benefit the community. In taking steps to address this responsibility, a variety of surplus food reduction and recovery initiatives have been implemented in both Oakland and San Diego schools, including food share tables and food donation programs.

Since 2016, San Diego USD diverted 381,000 pounds of food waste from the landfill. This waste diversion kept more than 193,000 pounds of CO_2 from being released into the atmosphere.

San Diego USD began its district-wide Love Food Not Waste program in 2016, after the state of California released legislation requiring schools to divert organic waste from landfills by 2020. The Love Food Not Waste program addresses four priorities: feeding students, reducing the district's budget, donating surplus food to the community, and converting unusable food waste to compost for gardens. Since 2016, San Diego USD diverted 381,000 pounds of food waste from the landfill. This waste diversion kept more than 193,000 pounds of CO_2 from being released into the atmosphere.

Green Gloves, Oakland USD's waste reduction and sorting program, was created out of the community's concern about the district's environmental impact. The program has grown to include district-wide trainings to educate staff on waste sorting and diverting procedures. The district has also implemented food share and donation programs, switched to compostable food trays as well as utensil and napkin dispensers and a new central cooking kitchen that will reduce pre-packaged foods in the schools, and incorporate training and education. Oakland USD programs have led to more than 50% of waste being diverted from the landfill, and they've become a model for other school districts on implementing food share tables successfully.

Oakland USD programs have led to more than 50% of waste being diverted from the landfill, and they've become a model for other school districts on implementing food share tables successfully.

Oakland USD students and families gather for the Food for Families program.

SUSTAINABLE SCHOOL FOOD RESOURCES

Check out these resources to make your school lunches sustainable, healthy, and enjoyable.

National Farm to School Network — These programs increase access to local food and nutrition education to improve children's health, strengthen family farms, and cultivate vibrant communities.

The Edible Schoolyard Project — This group develops school food education programs grounded in shared standards of practice and justice, responsive to the school's cultural, institutional, and funding realities.

FoodCorps — FoodCorps places a leader in a school to teach healthy eating and create a healthy eating culture.

Climate Friendly School Food — From Friends of the Earth, this program provides many resources to guide the creation of a climate-friendly school menu.

The Good Food Purchasing Program — Though not specific to school food, this program uses a framework that supports healthy and sustainable food purchasing.

Beyond Green Sustainable Food Partners — This group provides strategies and solutions for groups interested in switching to more sustainable foodservice platforms.

ROADMAP TO REDUCING AND RECOVERING SURPLUS FOOD IN SCHOOLS

ROADMAP TO REDUCING AND RECOVERING SURPLUS FOOD IN SCHOOLS

	FEDERAL	STATE	LOCAL	SCHOOL DISTRICT
ENABLING LEGISLATION	Good Samaritan Law; National School Lunch Act	State legislation will vary per state	Look to local county & cities' recycling & composting legislation	Board policy and/or Board resolution to approve program
APPROVAL & COMPLIANCE	USDA Child Nutrition Program Guidance	Approvals & compliance will vary per state	Health Department inspection	School Board; Nutrition Services Dept.
IMPLEMENTATION	Implementation occurs at local & district level	Implementation occurs at local & district level	Local funding opportunities; Logistics in place with recipients of recovered food	Nutrition Services Dept.; administration; faculty; students
GUIDANCE & RESOURCES	USDA EPA audits & tips	State guidance & resources will vary per state	County Waste Authority; County Health Dept.	District food share policies & procedures

The *Roadmap to Reducing and Recovering Surplus Food in Schools* flow chart—developed by Oakland USD and San Diego USD with support from BioCycle—can be referenced and customized for any state, local region, and school district. There are three primary steps in creating surplus food reduction and recovery programs in schools: ensuring that there is enabling legislation at the state and national level, gaining approvals and ensuring compliance with regulations, and beginning implementation. All of the steps are supported and assisted by written guidance and resources, provided in the fourth level of the Roadmap.

There are four primary agents in creating and implementing a surplus food reduction and recovery program: federal government, state government, local governments, and the school district. These agents each play a vital role during different steps of the process. For example, local government and the school district generally issue the approvals or provide oversight for programs at the individual school level.

There are three primary steps in creating surplus food reduction and recovery programs in schools: enabling legislation at the state and national level; gaining approvals and ensuring compliance with regulations; and beginning implementation.

The level of involvement of district staff in developing and implementing a food waste and recovery program may differ for each school district. Approval of any surplus food reduction and recovery program will generally need to come from the nutrition services department within the school district. Once a food recovery program is implemented in a school, the primary interface between the program and the faculty and students becomes the cafeteria. The food service staff play a vital role in correctly implementing the identified strategies, so proper training and education is essential.

With the brief introduction into the Roadmap outlined above, what follows is more detailed guidance, leading you step by step from enabling legislation to implementation. Each step is followed by a list of resources that guide and support schools. The last pages of this guide include a glossary of terms for the reader to reference in case the program names or terminology used are unfamiliar.

ENABLING LEGISLATION

Enabling legislation refers to legislation that grants a person or organization the power to take certain actions. Making sure that enabling legislation exists to support surplus food reduction and recovery programs requires educating and influencing state, local, and school district decision makers on the multiple levels of legislation and policies regarding serving requirements, food share, re-serving potential, and food donation in school meal programs. While some regulations are supportive of these initiatives, others are restrictive by providing stringent parameters and guidance on acceptable practices for food donation and recovery.

Where enabling legislation exists at the state level, advocates will need to educate school district decision makers about the laws and regulations behind these policies be it food donation, share tables, or landfill diversion to ensure a more efficient and successful policy implementation at the local level. This background knowledge will allow school district food service departments clear allowances, direction, and support to implement these vital programs.

LEGISLATION RESOURCES

The title of each resource is hyperlinked to the appropriate website for convenience.

FEDERAL

GOOD SAMARITAN LAW
Signed into law on October 1, 1996, this legislation provides legal protection for those who donate and receive donated food from civil and criminal liability if it causes harm to the recipient. The law opened up opportunities for food to be donated that is not readily marketable due to expiration, freshness, size, surplus, or other conditions.

NATIONAL SCHOOL LUNCH ACT
Signed into law in 1946, the National School Lunch Act provides low-cost or free school lunch meals to qualified students through subsidies. The majority of the subsidies provided come in the form of a cash reimbursement for each meal served.

USDA LUNCH ACT
In 2012, the United States Department of Agriculture released a clarifying statement to the National School Lunch Act that any non-consumed food is eligible to be donated to local food banks or charitable organizations.

STATE

Oakland and San Diego Unified School Districts use the following existing legislation to guide the formation and continuation of their own programs. Both districts were involved and advocated for specific language in the State of California's food share legislation. Oakland USD even worked with their state on programs for school food donation to students and their families that incorporate the state legislation on food donation to end recipients. These policies, though specific to their location (California State, Alameda County, and San Diego County), might exist already or be developed in other states and counties to guide school surplus food reduction and recovery programs.

CALIFORNIA GOOD SAMARITAN FOOD DONATION ACT
While this law would allow school districts to consider offering surplus food to students and families by extending the definition of an end recipient of donated food to include individuals, current USDA regulations do not allow this provision. School districts can only legally donate food to a 501(c)3 non-profit organization. This requirement is currently under review by the California Department of Education and the USDA Food and Nutrition Service department. AB 1219 does allow a school to donate items that are past their expiration date but still edible.

CALIFORNIA AB 1826
Setting requirements on commercial businesses and public agencies, including schools and school districts, to divert the organic waste that they generate, this bill will be in full effect January 1, 2020. On January 1, 2019 schools and businesses that generate more than 4 cubic yards of solid waste per week must arrange for organic waste recycling services. If statewide disposal of organic waste has not been reduced by 50 percent on or after January 1, 2020, the organic diversion requirement will expand to cover businesses and schools that generate 2 cubic yards of solid waste per week.

CALIFORNIA SB 557—SCHOOL FOOD DONATION
This California act, signed in 2017, reinforces and lists food items possible for schools to donate. The law covers items specifically left on cafeteria food share tables that can be donated and called for the California Department of Education to update its guidelines to match.

CALIFORNIA SB 1383—SHORT-LIVED CLIMATE POLLUTANTS: ORGANIC WASTE METHANE EMISSIONS
In 2016, the California State Senate set targets to achieve 50% reduction in levels of statewide disposal of organic waste by 2020 and a 75% reduction by 2025 (reduction rates are based off of the 2014 level). This legislation is used as a target to improve food waste and recovery programs in the San Diego and Oakland Unified School Districts.

LOCAL AND REGIONAL

ALAMEDA COUNTY MANDATORY RECYCLING AND COMPOSTING ORDINANCES
These Alameda County ordinances require recycling and composting service for businesses, institutions and multi-family buildings capable of handling the waste they produce.

A San Diego Unified School District cafeteria staff person counting the leftovers that will be donated and marking them on a log. These leftovers will get boxed up for the hunger relief agency to pick up.

An offer vs. serve poster example from San Diego Unified School District reminding students to only take the milk they will drink.

APPROVAL & COMPLIANCE

Before forming a surplus food reduction and recovery program, identify the priorities of the school, food service department, and district. Specific initiatives within the program can then be selected to meet those priorities. Example initiatives can include offer vs. serve, food share tables, and Smarter Lunchrooms. See the Implementation section for more information and resources about possibilities for your program.

Identifying key stakeholders on each level of the review and approval process is important to gaining buy-in for implementation and maintenance of successful programs. On the district level, participation from stakeholders such as the nutrition services director, sustainability office, custodial team, principals, and student green teams is vital. Other groups such as the county waste authority, local health department, and hunger relief organizations and food banks may also take part in the approval process and/or program formation and support.

A majority of the actions involved in implementing a program will be approved by the nutrition services department, making it one of the most important stakeholders in program creation.

A majority of the actions involved in implementing a program will be approved by the nutrition services department, making it one of the most important stakeholders in program creation. The initiatives will need to be vetted by the nutrition services department to address areas of concern, including capacity to accomplish the program's goals and priorities. Continue conversations by reviewing and discussing plans with the nutrition services department and the school's kitchen managers in order to maximize momentum.

Once priorities and initiatives are selected, identify the procedures, implementation, and collection strategies. For example, will an agency pick up the donated food at each school or at a collection hub? In these very early stages, the district will have time to consider procedures and staff time that will be needed. Note that issues with conflicting labor union contracts may need to be resolved during this step.

Oakland USD kitchen staff sorting surplus food for donation.

Developing clear, distinct policies and standard operating procedures (SOPs) will be important for the approval, implementation, and maintenance of surplus food reduction and recovery programs. While creating written policies and SOPs, reference any legislation applicable to the school district and review relevant areas with the local health department for successful compliance. For example, the Nutrition Services Hazard Analysis Critical Control Point (HACCP) procedures will need to be developed or updated for program approval from the local health department. HACCP is a required food safety plan to reduce foodborne illnesses in schools. Specific food reuse and inspection procedures will need to be developed and included in the department's plan. As a best practice, review and discuss plans and documents with key nutrition services department staff and school site kitchen managers for feedback. Once all approvals and program procedures are complete, the program will need to be finalized and implemented by nutrition services staff.

APPROVAL & COMPLIANCE RESOURCES

The title of each resource is hyperlinked to the appropriate website for convenience.

FEDERAL

USDA CHILD NUTRITION PROGRAM (CNP) GUIDANCE
This guidance and resources page, offered by the U.S. Department of Agriculture, can be used to ensure a surplus food reduction and recovery program is in compliance with the National Child Nutrition Program.

USDA SCHOOL FOOD WASTE INFOGRAPHIC

USDA FOOD WASTE REDUCTION GOAL
This 50% food waste reduction by 2030 goal, set by the U.S. Department of Agriculture and the U.S. Environmental Protection Agency, can be used to accelerate the creation of a surplus food reduction and recovery program within a school district.

USDA SHARE TABLES & RE-SERVING ITEMS
The USDA reinforces the benefits of share tables in schools, extends the ability to use share tables to at-risk after school components of Child and Adult Care Food Programs, and reviews the safety requirements when implementing share tables.

STATE

Below is a list of California Department of Education (CDE) food share and donation requirements for compliance with USDA Child Nutrition Program. Each state will vary, and schools will need to determine the state's individual requirements.

CALRECYCLE
Traditional recyclables and organic waste diversion programs are required in California. This guidance page by CalRecycle (California's Department of Resources Recycling and Recovery) provides information on the California recycling laws and resources for schools to meet requirements.

FOOD CONSUMPTION OUTSIDE THE FOOD SERVICE AREA
This Management Bulletin, issued by the CDE, provides guidance on food consumption outside of the food service area. It specifies that targeted unconsumed food (fruit, vegetable and grain) that does not require cooling or heating can be consumed outside of the food service area after the allotted meal service period.

GUIDANCE ON DONATION OF LEFTOVER FOOD IN CNPS
The CDE provides clarification on surplus food reduction and recovery strategies protected by California State. This guidance serves as a checklist for the compliance of a school's program.

USE OF SHARE TABLES
The CDE promotes the use of share tables and clarifies the state's health and safety codes for compliance in this Management Bulletin.

LOCAL AND REGIONAL

SHARE TABLES AT SCHOOLS
San Diego County and Oakland/Alameda County offer specific guidelines to follow when implementing share tables at schools. Although issued by their respective county health departments, these guidance documents can be used by any school to follow safe share table practices.

STOPWASTE
The waste authority in Alameda County, StopWaste, offers resources that help students, teachers and school district staff across the county become leaders in waste prevention and recycling at school. The agency's website offers curriculum and videos to teach in the classroom to connect student learning and action.

WASTE REDUCTION RESOURCE OPTIONS FOR SCHOOLS IN SAN DIEGO: A REGIONAL GUIDE
San Diego County lists requirements for various aspects of waste reduction in schools (recycling, surplus food reduction and recovery, etc.), proposes school activities, offers staff education and training, and provides key contacts in the district.

SCHOOL DISTRICT

OAKLAND UNIFIED SCHOOL DISTRICT RESOURCES
A variety of waste reduction and sorting resources that are created with the whole school community in mind; includes a food donation implementation guide and kitchen saving food poster.

SAN DIEGO UNIFIED SCHOOL DISTRICT RESOURCES
Includes program information, Standard Operating Procedures (SOPs), and other resources relating to the Love Food Not Waste program.

IMPLEMENTATION

CREATE A PILOT PROGRAM

For successful program implementation on a district-wide scale, it is helpful to pilot the program at a few schools. Choose schools that fit into the type of collection system identified for the program. For example, if the program includes agency pickup at more than one collection hub, then pick several schools associated within one of the hubs so the food consolidation and transportation system can be evaluated. Piloting the program at each school grade level (elementary, intermediate, high, etc.) in the district can be instructive, as each level may have unique requirements and strategies.

Create measures of success for the pilot, and implement ways to track progress along the way.

The principal and staff at the chosen school(s) should be informed about the program and its benefits, roles and responsibilities for school staff and students (provide training as needed), how long the pilot will last, and expected program outcomes. Kitchen staff should be trained and provided with reference materials developed for the program, including SOPs, hunger relief agency labeling requirements, pertinent Health Department documents and tracking and reporting requirements.

Create measures of success for the pilot, and implement ways to track progress along the way. Measurements can be quantitative (pounds of organic waste produced, pounds of food redirected to food banks and hunger relief organizations, etc.) and qualitative (staff feedback, observed behavior changes, etc.). Online tools can be helpful in tracking and measuring progress. For example, the Arc sustainability benchmarking platform can benchmark, track, and communicate the success of programs. After completion of the pilot, use recorded measurements to communicate the importance of the program and to adjust the program's strategies and procedures.

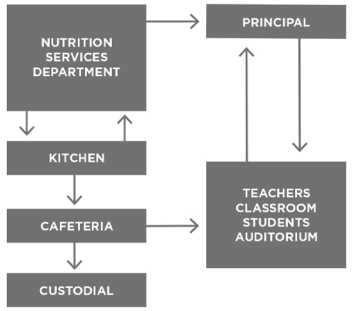


Illustration of the interdepartmental interactions needed for a successful program

ANALYZE PILOT RESULTS, MAKE ADJUSTMENTS, AND BEGIN DISTRICT-WIDE IMPLEMENTATION

Once the pilot has been analyzed and any necessary adjustments to the program have been made, create a timeline for district-wide expansion. The rollout for the remaining schools may take longer for large districts because staff training, in particular kitchen and custodial staff, is vital for the success of the program.

Develop resources for schools to use to increase success of the programs. Host assemblies to teach students about food waste, healthy eating, and school meal requirements. Create and display posters for the classroom and cafeteria. Teach students how to read and understand the posters for best results.

FUNDING THE PROGRAM

Though surplus food reduction and recovery programs can be developed and implemented with little cost, funding might be needed if the program includes infrastructure changes like cafeteria and kitchen renovations, additional refrigeration, or if it includes staffing or procedural changes that could increase overall budgets.

Investigate local, regional, and national funding that may be available. Local funding may be the most successful, specifically funding from waste authorities and county or municipal departments.

In California, for example, CalRecycle recently funded a grant program specifically for surplus food reduction and recovery implementation. A local waste authority may have suggestions or support. Alameda County's waste authority, StopWaste, provides support to reduce school food waste with its student action projects and grant funding. Oakland USD was able to use StopWaste's resources and received a $25,000 grant toward its surplus food reduction and recovery program. StopWaste's funding to Oakland USD even promoted and supported additional outside funding from the county's board of supervisors toward refrigeration for the program. The U.S. Department of Agriculture also offers federal grants to school districts for school nutrition equipment and programming.

Publicize the program and conduct outreach to the wider community to attract additional financial support. Waste hauling companies, local food banks, and hunger relief organizations may show interest in offering support for school surplus food reduction and recovery programs.

CONNECT ACTION WITH STUDENT LEARNING

The most effective school programs include connections to curriculum. In order to foster the strongest connection between surplus food reduction and recovery programs and curricula, teachers should be trained in strategies that can be taught in the classroom and connected to actions being taken at the school. Such strategies can be as simple as having students complete food waste calculations in math homework or as complex as conducting a cafeteria and kitchen food waste audit. Students benefit by rooting their learning to the real world and issues they have a direct relationship to and can have a positive impact on.

Many resources exist that can help teachers incorporate waste reduction and healthy eating themes in their curriculum. The World Wildlife Fund (WWF) provides a Food Waste Warrior Toolkit that includes lessons, activities, and resources specifically for reducing food waste in schools. The lessons are aligned to national curriculum standards and designed to get students involved in school surplus food reduction and recovery programs. U.S. Green Building Council's Learning Lab, an online platform that collects high-quality curriculum from over a dozen partners in one place, provides teachers more than 500 sustainability lessons that are created to be implemented in the classroom alongside typical curriculum. Learning Lab has over 100 food and waste lessons, all aligned to national curriculum standards, which contain all the resources and information needed to be executed in the classroom.

One of the racks for food rescue in a San Diego Unified School District refrigerator. Rescued food from several school production kitchen clusters is consolidated for pick up by a larger hunger relief agency.

A truck from San Diego Rescue Mission, a hunger relief agency, backed up to a San Diego Unified School District loading dock to collect rescued food.

SCHOOL DISTRICT RESPONSIBILITIES

The following checklist can be used by the nutrition services departments and supporting stakeholders. It includes a breakdown of typical responsibilities and roles for each department for successful implementation of a surplus food reduction and recovery program.

NUTRITION SERVICES DEPARTMENT

Program coordinator checklist:

- ❒ Ensure that the director is informed and committed
- ❒ Develop an action plan with a timeline that is customized for the department and district
- ❒ Review and adjust procedures as needed based on director feedback

Nutrition services staff responsibilities:

- ❒ Develop written policies and standard operating procedures for each category listed, as applicable:
    - Food share tables
    - Food waste and food recovery tracking and measurement
    - Food Share and Take it to Go advertising (see glossary for program types)
    - Breakfast after the Bell monitoring and adjustment (see glossary for program types)
- ❒ Develop and implement staff trainings (back to school, monthly meetings, etc.)
- ❒ Menu planning

PRINCIPAL'S OFFICE

Program coordinator checklist:

- ❒ Inform principal and office staff of the program and procedures, including food donation logistics and implementation
- ❒ Ensure meal poster is created and reviewed with teachers/faculty
- ❒ Ensure letter to inform and engage parents/guardians is created and distributed for principal's office staff
- ❒ Create and implement a food donation program for the school's families and students, when possible

Principal's office staff responsibilities:

- ❒ Send home flyer informing and engaging parents/guardians of program and initiatives
- ❒ Review food donation logistics and implementation
- ❒ Ensure teachers review meal poster periodically with students
- ❒ Encourage teachers to review daily menus with students prior to meals and implement curriculum to support program outcomes
- ❒ Implement program elements, such as recess before lunch and food saving backpack program

KITCHEN

Program coordinator checklist:

- ❒ Inform and train kitchen staff
- ❒ Create and distribute Menu Production Worksheets that include food waste measurement tracking
- ❒ Ensure kitchen staff understands meal components and serving requirements
- ❒ Create food waste measurement and tracking procedures
- ❒ Inform and train kitchen staff on measurement and tracking procedures

Kitchen staff responsibilities:

- ❒ Prepare food correctly and in quantities close to the estimated amount needed
- ❒ Monitor meals and snacks served in the classroom, and adjust the food that is served compared to what comes back
- ❒ Complete Menu Production Worksheets (see link above)
- ❒ Track and measure food waste
- ❒ Adjust meal quantity based on what is ordered to reduce left over food items
- ❒ Implement food donation procedures

CAFETERIA

Program coordinator checklist:

- ❒ Ensure meal poster is created and displayed at entrance of cafeteria and that teachers review meal poster regularly with students
- ❒ Inform and train kitchen staff on proper procedures
- ❒ Review and train kitchen staff on Smarter Lunchroom initiatives to create and promote a calm eating environment

Kitchen staff responsibilities:

- ❒ Implement program elements, such as food share tables, "Take it to go," and Smarter Lunchroom initiatives (see glossary for program types)
- ❒ Implement procedures for food waste reduction

CUSTODIAL DEPARTMENT

Program coordinator checklist:

- ❒ Establish procedures for custodial staff to assist program
- ❒ Inform and train custodial staff on procedures
- ❒ Create waste measurement and tracking procedures that include food waste

Custodial staff responsibilities:

- ❒ Support and assist food share tables, tracking procedures, and waste reduction efforts

IMPLEMENTATION GUIDANCE & RESOURCES

The title of each resource is hyperlinked to the appropriate website for convenience.

BACKPACK PROGRAM
Backpack Programs are common food bank programs to provide a backpack full of uneaten food from school lunches to students for the weekend. The linked page explains BackPack programs, how communities can help, and locator tool to find out if a local food bank participates in a similar program..

EPA FOOD TIPS FOR K-12 SCHOOLS: GET KIDS TO EAT MORE AND WASTE LESS
Use the tips listed in this EPA resource to frame your food waste reduction strategies. Each strategy is linked to research and further guidance.

EPA GUIDE TO CONDUCTING STUDENT FOOD WASTE AUDITS: A RESOURCE FOR SCHOOLS
Use this resource to guide a student-led food waste audit as a way to connect the school's actions with student learning.

FOOD WASTE WARRIOR TOOLKIT
World Wildlife Fund (WWF) offers lessons, student activities, and resources to get students involved in school food waste reduction in this toolkit. All of the lessons are aligned to Next Generation Science Standards and are ready to be implemented in the classroom.

FURTHER WITH FOOD
Furtherwithfood.org is a site created through public-private partnership with a wide variety of associations and government agencies and provides resources to inform the public about food waste.

OAKLAND UNIFIED GREEN GLOVES
Green Gloves is a sustainability focused program in Oakland Unified School District. The program works to reduce the district's environmental impact while also teaching and empowering students. The Green Gloves website provides resources to develop and implement sustainable practices and programs. School district staff update new resources periodically, as they become available.

K-12 SCHOOL FOOD WASTE REDUCTION STRATEGIES
The Environmental Research and Education Foundation (EREF) and the School Nutrition Association (SNA) created the School Cafeteria Discards Assessment Project to build awareness and implement food waste reduction programs in schools. Participating schools monitor and measure their food waste and make efforts to redirect it away from landfill. This resource, created with lessons learned through this program, provides steps and guidance to conducting successful school waste audit.

LEARNING LAB
Learning Lab is USGBC's online education platform for K-12 teachers and school leaders to find high-quality, standards-aligned lessons that encourage student leadership, sustainability literacy and real-world action. Search for over 100 standard aligned lessons on food and waste that are ready to be taught in the classroom.

PLATE WASTE PREVENTION IN CHILD NUTRITION PROGRAMS
The CDE identifies three main solutions for reducing food waste: accommodating student taste preferences, helping students deal with early meal schedules and insufficient time to eat, and redistributing uneaten, intact items.

SAVE THE FOOD
NRDC's food waste initiative, Save the Food, provides guidance and resources on food waste reducing recipes, food storage tips, and planning guides.

SMARTER LUNCHROOM STRATEGIES
The Smarter Lunchrooms Movement, created through research at the Cornell Food and Brand Lab, offers inventive and creative strategies to promote healthy eating and reduce food waste from school lunches.

STOPWASTE
A public agency in California's Almeda County to reduce waste created by businesses, residents, and schools. The agency provides tailored resources and guidance for schools, businesses, and residents. Below are two StopWaste resources specific for reducing food waste in schools.

STOPFOODWASTE.ORG
Created by the public agency in California's Alameda County, StopWaste, Stopfoodwaste.org provides resources, tips, and videos for preventing the food waste at school and beyond.

STOPWASTE AT SCHOOL
StopWaste at school works with students and school staff in California's Alameda County to reduce waste production and promote recycling. Their site provides curriculum and videos, local success stories, and other helpful resources.

TOO GOOD TO WASTE: A FOOD DONATION GUIDE FOR ORGANIZATIONS IN THE SAN DIEGO REGION
San Diego County issued this guidance packet for food donation, which includes a step-by-step guide, checklists, and record keeping documents for food donation.

USDA FOOD AND NUTRITION SERVICE: OFFER VS SERVE
This resource provides helpful guidance to help school districts understand the “offer vs. serve” strategy in school lunches.

WASTED FOOD SOLUTIONS
The Center for EcoTechnology provides tailored solutions for states in the Northeast for reducing food waste.

WE FUTURE RECYCLE
A New York State based organization, We Future Cycle sets up robust recycling programs in schools and teaches students and staff that nearly 95% of all waste can either be recycled or composted if it was just sorted. Through classroom presentations, extended hands-on training, adjustment in food service packaging and additional environmental education, We Future Cycle jump starts students to become change agents for the environment.

ABOUT THE AUTHORS

Nancy Deming is a K-12 Sustainability Specialist who works with Custodial and Nutrition Services at the Oakland Unified School District, the Central Contra Costa Solid Waste Authority's Recycle Smart Schools Program, and Alameda County Schools and District.

Janet Whited is an Environmental Specialist, within the Operations Division, at the San Diego Unified School District.

Nora Goldstein and BioCycle (BioCycle.net) assisted with guidance and support for the creation of this Roadmap and suggested additional resources to include.

GLOSSARY

Backpack Program — School food recovery strategy where surplus food can be donated to students' families for meals during the weekend. These programs are protected by the Good Samaritan Law.

Breakfast after the Bell (or Breakfast in the Classroom) — An alternate approach to school breakfast programs, where breakfast is served after school has begun as opposed to 15 to 30 minutes prior to the first period. This approach allows more students receive breakfast and reduce waste. There are multiple models for this approach and they can be tailored for each school.

Child and Adult Care Food Program (CACFP) — A federally-funded program administered to provide aid to child and adult care institutions and family or group day care homes for nutritious foods.

Composting — Gathering of organic matter to use for fertilizer. Unused school food that cannot be consumed (such as unpackaged or expired food) can be added to a composting bin and repurposed for garden fertilizer.

Food Donation Programs — School food recovery strategy where surplus food can be donated to food banks or charitable organizations. These programs are protected by the Good Samaritan Law.

Hazard Analysis and Critical Control Points (HACCP) — A required management plan in which food safety is addressed to reduce foodborne illnesses in schools.

Meal Poster — Poster that displays the healthy portions and options of each food group to students in a fun and exciting way.

Menu Production Worksheets — Planning documents that can be used to guide menu production to meet the requirements for the various age groups within K-12 schools.

Offer versus Serve — School waste reduction strategy where students can decline some of the food offered in a reimbursable lunch or breakfast.

Reimbursable Meal — Meals served by schools must meet certain requirements in order for the school to receive reimbursement (under the National School Lunch Act). Review each meal requirement from the U.S. Department of Agriculture.

School Food Waste Reduction Program — School program to reduce the amount of waste produced through various strategies (offer versus serve, food service staff trainings, reducing amount of food ordered by the school etc.). For best results, these programs should contain additional waste recovery plans and strategies.

School Food Recovery Programs — School program to recover surplus food inevitably created through various strategies (food donation, share tables, etc.). For best results, these programs should contain additional food waste reduction plans and strategies.

Share Tables — School food waste recovery strategy where students can place unwanted and unopened food and drinks they do not intend to consume onto a table outside of the serving line. Students can take items from the share table at no additional cost.

Smarter Lunchrooms — From the Smarter Lunchroom Movement, these strategies are intended to increase consumption of healthy food and reduce food waste.

Take it to Go — School food waste reduction strategy where students are allowed to take uneaten food from the cafeteria, with the intent to eat the food later.

Example of a Food Share Table and Sorting Station from Oakland USD

REDESIGN. RETHINK. REDUCE. REUSE. GO BEYOND RECYCLING.

WHAT IS ZERO WASTE?

Zero waste is a philosophy that encourages the redesign of resource life cycles so that all products are reused; a process that is very similar to the way that resources are reused in nature. Although recycling is the first step in the journey, achieving zero waste goes far beyond. By focusing on the larger picture, facilities and organizations can reap financial benefits while becoming more resource efficient.

According to the EPA, the average American generates 4.4 pounds of trash each day, and according to the World Bank, global solid waste generation is on pace to increase 70 percent by 2025. For every can of garbage at the curb, for instance, there are 87 cans worth of materials that come from extraction industries that manufacture natural resources into finished products—like timber, agricultural, mining and petroleum. This means that while recycling is important, it doesn't address the real problem.

THE TRUE ZERO WASTE RATING SYSTEM

The TRUE (Total Resource Use and Efficiency) Zero Waste Rating System enables facilities to define, pursue and achieve their zero waste goals, cutting their carbon footprint and supporting public health. It helps facilities quantify their performance and find additional ways to improve their progress towards zero waste.

WHY EARN TRUE ZERO WASTE CERTIFICATION?

TRUE certified spaces are environmentally responsible, more resource efficient and help turn waste into savings and additional income streams. TRUE certified projects are saving on operational costs, reducing greenhouse gas emissions, managing risk, reducing litter and pollution, reinvesting resources locally, creating jobs and adding more value for their company and community.

TRUE IS A WHOLE SYSTEMS APPROACH

TRUE profoundly changes our approach to resources, production and facility operations, changing how materials flow through society and resulting in no waste. TRUE is about restructuring product and distribution systems to prevent waste from being manufactured in the first place. TRUE encourages the redesign of resource life cycles so that all products are reused and promotes processes that consider the entire lifecycle of products used within a facility. With TRUE, your facility can demonstrate to the world what you're doing to minimize your waste output.

HOW DOES CERTIFICATION WORK?

The TRUE Zero Waste certification program is an Assessor-based program that rates how well facilities perform in minimizing their non-hazardous, solid wastes and maximizing their efficiency in the use of resources. A TRUE project's goal is to divert 90 percent or greater of materials from the landfill, incineration (waste-to-energy) and the environment for solid, non-hazardous wastes for the most recent 12 months.

Certification is available for any physical facility and their operations, including facilities owned by: companies, property managers, schools, government agencies and nonprofits. Facilities achieve TRUE certification by meeting 7 minimum program requirements and attaining at least 31 out of 81 credit points from the TRUE Zero Waste Rating System. The number of credit points that a project earns determines the certification level it receives (Certified, Silver, Gold or Platinum).

BENEFITS OF TRUE ZERO WASTE CERTIFICATION:

SAVE MONEY: Waste is a sign of inefficiency and the reduction of waste reduces costs.

FASTER PROGRESS: A zero waste strategy improves upon product processes and environmental prevention strategies, which can lead to larger, more innovative steps.

SUPPORT SUSTAINABILITY: A zero waste strategy improves your triple bottom line and supports the three Ps—people, planet and profit.

IMPROVE MATERIAL FLOWS: A zero waste strategy uses fewer new raw materials and sends no waste materials to landfills, incineration (waste-to-energy) and the environment.

TRUE.GBCI.ORG

A Typical Family Nights Out Class

Overview

A typical Family Nights Out class at the Edible Schoolyard Berkeley is from 5:30pm – 7:30pm and emphasizes the cooking and eating dinner together. The basic format of a Family Nights Out class mirrors a typical kitchen class, however at Family Nights Out classes we prepare an entire meal. Participants in our Family Nights Out classes range in age and kitchen confidence. Our classes are flexible and adaptable, appealing to students, parents, toddlers, and grandparents alike.

Entering the Kitchen (ongoing)

As participants enter the kitchen, we welcome the families and have each person put on a name-tag and sign a raffle ticket. There is a bowl of seasonal fruit by the door for people to snack on. Because parents get off work at different times, and have to commute from various places, most participants trickle in over the course of the first 15-30 minutes.

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At the Chef Meeting

(10 MINUTES)

The Chef Meeting is where we introduce our menu for the family class. We typically prepare three recipes per table, and menus reflect what the students are currently learning in their regular kitchen classes. A standard Family Nights Out menu contains a balance of grains, vegetables, and protein.

- Introduce the staff and the menu for the evening.
- Review basic kitchen rules and systems.
- Explain why each recipe was chosen for the class (i.e., simplicity, nutrition, cost, etc.) and how each recipe contributes to creating a complete meal.
- Emphasize the kitchen skills and life skills in each recipe and discuss possible variations.
- Address how to use the leftover ingredients in other recipes (i.e., what can you make with leftover beans? How can you use extra sweet potato?)
- If applicable, discuss budgeting issues and cost effectiveness.
- Take questions.

At the Table

After the Chef Meeting, have participants wash their hands and break up into three cooking groups. If possible, keep each family together. Groups should have an average of 10 participants, 1 kitchen teacher, and 1-2 high school interns or community volunteers.

1. REVIEW THE RECIPES AND INTRODUCE KNIFE SKILLS AND COOKING METHODS

(5-10 MINUTES)

- Demonstrate how participants are going to prepare each ingredient on the platter. Identify the various tools that can be used depending on the age, skill level, and confidence of each cook. great opportunity to hear everyone's voice at the table and be reminded of students' names.
- Break down the steps of the recipes and explain the cooking jobs.

2. CHECK-IN AND ASSIGN COOKING JOBS (5 MINUTES)

- Have each participant answer a "check-in" question (i.e., What's your favorite recipe to cook at home?). This can be a fun or provocative question that may or may not have anything to do with food, but will allow the families to get to know each other.
- Have the participants identify the cooking job(s) they would like to work on for the evening

3. COOK AND SET THE TABLE (60 MINUTES)

- Participants review the recipes together before breaking up into their cooking jobs.
- Encourage everyone to taste as they cook and adjust the seasoning along the way.
- When the participants are done preparing the ingredients and the food is still cooking, participants clean and set the table. We typically use dinner plates, silverware, cups, and napkins, and, like in a regular kitchen class, participants are encouraged to create a unique centerpiece using flowers from the garden and other interesting items they find around the kitchen.

4. EAT (20-30 MINUTES)

- Since the families prepare an entire dinner, the Family Nights Out classes allot more time for eating and conversation. This is also a great opportunity to discuss modifications of the menu and possible adaptations for the recipes.

5. CLEAN UP (5 MINUTES)

- When the meal is winding down, we talk about how the cleanup process will work. We have participants bus their own plate, cup and silverware to the busing station, a group will start to work on washing dishes, while others clean the tables and cooking stations.

6. CLOSING / SOMETHING SWEET (5 MINUTES)

- Once most of the clean up is done, we ask all participants to make a circle around the middle table and hold our raffle. Raffle items are mostly donated items, and range from Edible Schoolyard t-shirts, harvested items from the garden, oils, and sauces to cast iron pots and pans.
- We pass around a try of seasonal fruit and dates while everyone shares something sweet about their experience in class.

THE EDIBLE SCHOOLYARD PROJECT

You're invited:

ELD FAMILY NIGHTS OUT

at the Edible Schoolyard

ELD teachers and the Edible Schoolyard would like to invite students and their families to dinner at the Edible Schoolyard Kitchen.

ELD FNO

5:30-7:30 pm

in the Edible Schoolyard Kitchen

We will cook and eat a meal together; share and learn new recipes and techniques for preparing meals at home; and have lots of family fun!

FOR MORE INFORMATION, ASK GRISELDA COONEY (griselda@edibleschoolyard.org) OR YOUR AVID TEACHER

Family Nights Out at the Edible Schoolyard

Join us in the Edible Schoolyard Kitchen as we cook and eat together; share and learn new recipes and techniques for preparing meals at home; and have lots of family fun! Classes begin at 5:30pm and end at 7:30pm. Family members of all ages are encouraged to participate!

Spots are limited, and registration will happen on a first-come, first-serve basis. To attend Family Nights Out, please fill out this form and return it to your ELD teacher as soon as possible.

Student Name & Grade: _____

Parent/Guardian Name: _____

Phone Number: _____

Email: _____

Mailing Address: _____

Food Restrictions: _____

Who will be coming?

What do you hope to take away from participating?

Registration and Payment Information

This class has limited spots, and registration will happen on a first-come, first-served basis.

Once you have returned this form to your ELD teacher, we will contact you via email to register for the class online. This event is FREE and there is no payment expected for registration or participation.

Family Nights Out Survey

Family Nights Out Surveys

After attending Family Nights Out: Yes or No

- I have a greater understanding of what my student does and learns at the Edible Schoolyard
- I feel more connected to the King community after attending the Family Nights Out classes
- I learned new techniques, skills, or recipes that I am excited to bring into my kitchen
- I learned something new about my student's eating habits and preferences
- I enjoyed the process of cooking collaboratively with my family
- I am excited by how confident and competent my student was in the kitchen.
- I am more likely to trust in my student to cook and help cook at home.
- I am more likely to cook collaboratively with my family in the future.
- I would be interested in attending another Family Nights Out in the future.
- I would recommend Family Nights Out to friends and family.
- How was your experience with using the lottery system

Any comments. thoughts or feedback about your experience at Family Nights Out?

CTE Public and Community Health

Career Technical Education (CTE) Public and Community Health is a year-long, (g) credit elective course that uses Public Health as a framework to investigate health inequities caused by unequal access to healthy food. Students explore nutrition, diet-related disease, and the public health process in preparation to design and implement projects to create more equitable access to food in their school community. Students discuss and think critically about their personal relationship to food and the food cultures they have grown up in.

CTE Public and Community Health is taught after school hours during an hour-long seventh period and during a 3-hour evening block period in the Edible Schoolyard kitchen classroom at King Middle School. Students also engage in internships outside of class hours with local organizations working towards equitable, sustainable, local food systems that positively impact the health of their community. The chart below outlines how learning progresses over the course of 6 units and 71 lessons, including the unit goals and key content and activities for each lesson.

UNIT 1: FOOD & COMMUNITY

Goal: Students will consider and explore their relationship to food and the meanings that food holds for them and for others. Students also learn the fundamentals of working collaboratively in a kitchen.

Overview: Through cooking, discussion, structured reflection, guest lectures, and group-building activities, students build relationships with one another and develop their fluency operating in the kitchen classroom. In this unit, students develop the foundational skills required for the rest of the course.

Lessons	Key Content	Main Activity
Lesson 1: Orientation	Course objectives and schedule. Students decide if they wish to enroll or drop.	Students review the syllabus and listen to a short presentation about internships.
Lesson 2: Kitchen Orientation	Kitchen layout, systems, and expectations.	Students who have worked in the Edible Schoolyard kitchen lead a tour for students who have not worked in the space before.
Lesson 3: Team-Building	Team-building and getting to know one another.	Students play a variety of team-building games in order to get to know one another and start building a classroom culture.

Lesson 4: Cooking Together	Basic kitchen skills, including making precise measurements and knife skills.	Students observe a knife skills demonstration. They practice knife skills as they prepare a recipe for minestrone soup.
Lesson 5: Reading Recipes	Written recipes tend to follow a standard basic format that includes a list of ingredients and step-by-step instructions. Reading a recipe carefully helps to ensure success in cooking that food.	Students complete a group reading activity highlighting important steps in written recipes. Students read recipes and give verbal instructions to their peers.
Lesson 6: Cleaning a Kitchen - Guest Lecture Cal Peternell	Cleaning is an integral part of cooking. There are many components of a kitchen that must be cleaned before the job is finished.	Students practice cleaning the kitchen using a checklist to ensure the job is finished.
Lesson 7: Self-Determination in Food and Cooking	There are many factors that influence how much control we have over what we eat. Recognizing and reflecting on these factors can increase the agency we have over our food.	Students discuss the limitations on their agency and explore ways to expand it.
Lesson 8: Preparing and Sharing Food	Preparing food for another person can be an act of care and an expression of love.	Students talk about their experiences of giving and receiving food and the emotions they've felt during those experiences.
Lesson 9: Guest Lecture Expectations and Norms	Behavior expectations and class norms for guest lectures are slightly different from those of a standard class. Demonstrating respect for guests is paramount.	Students complete a group brainstorm on respectful behavior.
Lesson 10: Private Chef Work - Guest Lecture Chef Braggs	There are career opportunities in many different fields of culinary practice including restaurant, hotel, catering, and private chef work.	Students observe Chef Terry Braggs' lecture about his experience as a professional private chef.
Lesson 11: Introduction to Measure D (Berkeley's Soda Tax)	Measure D resulted in a sugar sweetened beverage (SSB) tax designed to reduce SSB consumption and fund nutrition education programs.	Students watch a video on the Measure D campaign and view campaign materials.

Lesson 12: Youth Activism in Food and Health - Guest Lecture Dante Kaleo Alnas-Benson	Strong community outreach and engagement drove the Measure D campaign to an overwhelming victory. SSB tax revenue has supported nutrition programs since.	Youth Activist Dante Kaleo Alnas-Benson shares stories of his involvement in the Measure D campaign and about his current work.
Lesson 13: Overview of Internships	Paid internships are available to all students in the class. Students must complete HR enrollment with the district to be eligible.	Students view a presentation on internship opportunities and consider which they are most interested in.
Lesson 14: Professionalism 101 and Workplace Responsibility	Sometimes perseverance and completing boring tasks are necessary parts of a job. Professionalism also includes being aware of workplace policies around sexual harassment and technology use.	Students complete a sixty-page onboarding packet including reviewing all of BUSD's employee policies.
Lesson 15: Onboarding with BUSD - Guest Expert Lona Kelly	Completing paperwork and bringing necessary documents are essential to being hired.	Students experience an onboarding meeting with a BUSD HR specialist.

UNIT 2: FOOD & HEALTH

Goal: Students will examine the relationship between food and health and take the food handlers certification exam.

Overview: Students learn proper food handling and safety practices and take the food handlers certification exam. Through discussion and structured reading activities, students build a basic understanding of the causes, symptoms, and impacts of food-borne illnesses and diet-related diseases. Then, they reflect on cultural narratives around nutrition and food as they relate to health through analysis of nutrition guides, cooking activities, and discussion. Students discuss a broad definition of nutrition in relation to food and food practices, and consider the emotional dimension of how emotional relationship to food impacts nutrition/health. Something media literacy, analysis reflect on their own understandings of nutrition, build an understanding of nutrition and health as culturally-specific practices,

Lessons	**Key Content**	**Main Activity**
Lesson 16: Intro to Food Safety	Germs cause most foodborne illness. Washing hands, keeping clean, and properly cooking foods reduce the odds of spreading diseases.	Students play Jeopardy game to highlight the knowledge they already have and learn new concepts in food safety.
Lesson 17: Food Safety	Temperature control is essential for	Students complete an online

Course and Exam	avoiding food spoilage and bacterial growth. Sick people should not handle food. Proper hand washing is the most important way to stop the spread of foodborne illness.	Food Safety Certification Course that includes videos and slideshows. Students then take the Food Safety Certification Exam and earn their Food Handler Cards.
Lesson 18: Sugar and Food Culture Readings	Diets high in refined sugar are poor for your health and increase your risk of diabetes and heart disease.	Students complete a jigsaw reading of facts sheets from UCSF's Sugar Science program.
Lesson 19: Apple Crisp and Personal Relationship to Sugar	Although too much refined sugar is harmful to our health, foods that contain sugar often hold immense cultural and personal significance. It is important to honor the meanings foods hold for us as we develop "healthy" relationships to food.	Students cook and eat Apple Crisp, and discuss their personal relationships to sugar and "unhealthy" foods. Students read an excerpt from "The Gluten Lie" about the Edible Schoolyard and sugar.
Lesson 20: Nutrition Guides Around The World	Understandings of health and nutrition vary by culture. There is no one way to define "healthy" eating. However, there are some basic principles that most people agree on.	Students compare nutrition guides from around the world in a gallery walk activity. They identify similarities and differences between the guides to start developing their own definitions of "healthy" eating. They draw a representation of their current diets in the style of a nutrition guide.
Lesson 21: Cooking the Nutrition Guide	Nutrition guides are irrelevant if we don't apply our understanding of them to our diets and how we feed ourselves.	Students think of meals they cook or eat at home and compare them to nutrition guidelines. Students then plan changes to their meals that would align them with nutrition guidelines.

UNIT 3: FOOD & PUBLIC HEALTH

Goal: Students will be able to describe, explain, and give examples of a public health approach to addressing food-related health issues.

Overview: In this unit, students focus on four key steps of a public health approach: 1) identify, 2) understand, 3) intervene, and 4) evaluate through a case study of the 2014

Berkeley Measure D to tax sugar sweetened beverages. Students learn through guest lectures, structured discussions, jigsaw readings, cooking activities, and analyzing a local public health campaign as a case study. Through learning about health disparities in their local community, students analyze and discuss the relationship between of surveillance, identification, intervention, and evaluation. Students use the social-ecological model to classify various social determinants of health. Students then propose interventions designed to reduce diet-related disease for each layer of the social ecological model.		
Lessons	**Key Content**	**Main Activity**
Lesson 22: Diabetes Statistics	Diabetes and pre-diabetes are serious diet-related health conditions. Their prevalence varies by state and racial/ethnic groups.	Students examine the 2017 National Diabetes Statistics Report. They learn about the national prevalence of diabetes and pre-diabetes, and how prevalence varies by state and by racial/ethnic groups.
Lesson 23: Berkeley Health Status Report	The prevalence of diabetes in Berkeley varies by geography and racial/ethnic groups. Analysis of these trends reveals health disparities within the community.	Students complete a jigsaw reading activity of the Berkeley Health Status report.
Lesson 24: Relationship to Healthy Food	Everyone's relationship to healthy food is different, and is shaped and impacted by a variety of factors. "Health food" and "Healthy" food are not necessarily the same thing.	Students discuss a variety of prompts around healthy food and examine their own narratives.
Lesson 25: Social-Ecological Model of Public Health	Public health's socio-ecological model is one way of modeling how the health of an individual or community may be simultaneously impacted by environmental factors on a variety of scales.	Students complete a structured note taking activity in which they draw the social-ecological model.
Lesson 26: Internships and Performance Evaluation	Most professional workplaces operate under a shared set of basic expectations. It will be important to understand and follow these expectations while completing the internships for this course.	Students observe a presentation about internships available to them. Students generate a list of positive workplace behaviors that is synthesized into a rubric they will be assessed with.
Lesson 27: Food Culture Interventions	Food culture can be shifted towards healthier norms through public	Students watch, discuss, and analyze a short film on

	health interventions.	unhealthy food culture.
Lesson 28: Public Health Interventions	Public health interventions can target each level of the social ecological model.	Students complete a group brainstorm to populate a chart with a variety of food focused public health interventions.
Lesson 29: Evaluations 101	Evaluation is crucial to successful public health interventions because it provides the opportunity to gather information on whether the current approach is working or not.	Students complete a jigsaw reading of an academic journal guide to Public Health Evaluation.
Lesson 30: Public Health and Food Policy - Guest Lecture Leyla Marandi, MPH	Government policy is a powerful driver of change. Influencing purchasing guidelines for school food would be a powerful driver of change towards a healthier food system.	Students hear from a local public health and food policy advocate on her work guiding school food purchasing policies
Lesson 31: Cooking at "Soul Food Junkies" as a public health event	Students contextualize and describe the project they will engage in the following day. Students practice describing the purpose and goals of the course.	Students discuss how the event the following day relates to the public health approach. They develop material to share that discussion at the event.
Lesson 32: Cooking Soul Food at South Branch Berkeley Library	Soul food is a food tradition with deep roots in Southern Black culture. Recognizing the cultural history of this cuisine is an important way of honoring the culture it comes from.	Students discuss the roots and history of Soul Food. They prepare food and serve it at a City Public Health hosted film screening of "Soul Food Junkies."

UNIT 4: PUBLIC HEALTH IN PRACTICE

Goal: Students will be able to give examples of food projects that are public health endeavors. For each example students will be able to describe the positive health outcomes associated with the project as well as discuss strategies to increase the reach or improve outcomes.

Overview: Students will explore food and nutrition focused public health projects for each level of the social ecological model. At the individual level they are participating in this class and setting personal goals and aspirations for healthy eating. For the organizational level they see the work of BUSD's Nutrition Services to create an environment rich with healthy foods. Berkeley Food Network provides an important examples of an organization working against malnutrition and hunger at the community level. Students examine and give feedback on the

BUSD Wellness Policy to learn about the importance of public policy in shaping the other layers.		
Lessons	**Key Content**	**Main Activity**
Lesson 33: Intentions for 2019	Setting goals and aspirations can be an important first step in bringing them to life. Taking time to nourish and care for oneself is also an important practice in achieving goals.	Students engage in reflection and intention-setting in the garden, followed by harvesting produce and cooking a healthy, delicious meal.
Lesson 34: Wellness Policy	Public policy plays an important role in steering action and change.	Students do a gallery walk and silent conversation using post its to comment on portions of the wellness policy.
Lesson 35: Assessment and Feedback on Course END OF SEMESTER 1	Students evaluate how much they have learned over the course of the semester and provide feedback on their experience.	Students complete a group cooking challenge and fill out a self assessment/course feedback form.
Lesson 36: Professional Communication	Practices for professional settings include certain norms of communication, timeliness, honesty, and admission of errors.	Students practice communicating in difficult workplace scenarios and through the process highlight a few key insights for maintaining professional communication.
Lesson 37: School Food - Guest Lecture BUSD Executive Chef Bonnie Christensen	School Food has many nutrition regulations and often operates on a very large scale.	Student listen to a guest lecture from BUSD's Director of Nutrition Services.
Lesson 38: School Food as Public Health	School Food is a key public health program to fight malnutrition.	Students read and respond to articles describing school food programs, particularly Free and Reduced meal programs.
Lesson 39: School Food Interventions	Students consider and ideate how to improve school food programs for improved community health	Students discuss and brainstorm in small groups on how to improve school food.
Lesson 40: Hunger and Health	Hunger is often caused by food insecurity - having limited access to nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in	Students read and discuss articles and factsheets on hunger and food relief programs in their own community.

	socially acceptable ways. People experience food insecurity because they don't have enough money to buy food, or don't have access to resources to get food. There are a variety of ways to address these issues.	
Lesson 41: Fighting Hunger - Guest Lecture Sarah Palmer DeFrank of Berkeley Food Network	Food insecurity is a widespread issue in many communities that is often accompanied by stigma or judgment. There are a variety of ways the people work to address food insecurity, including traditional pantry models and food network models.	Students hear from the Director of a local non-profit organization mobilizing to meet food needs in Berkeley.

UNIT 5: PUBLIC HEALTH PROJECTS

Goal: Students will be able to design and implement a project to increase access to healthy food in their school community. Students will be able to describe how their approach is responsive to community needs, based on interviews and surveys with community members, and concisely describe their project goals and outcomes in writing and through verbal presentations.

Overview: Students will use design thinking to identify student food needs not currently being met by the existing food systems. Student groups will develop multiple potential solutions through rapid prototyping before selecting one strategy to carry out. Students will write project proposals, implement their projects, and complete project reports modeled on the Healthy Berkeley Grant. Students will practice presenting their projects to their peers in preparation for sharing at the end-of-year dinner.

Lessons	Key Content	Main Activity
Lesson 42: RFP and Outline	Students will learn about the Request for Proposals processes for the Healthy Berkeley grant and receive their project assignment	Students read each component of their project assignment aloud as a group and reiterate their understanding of the assignment and how it relates to Healthy Berkeley grant.
Lesson 43: Design Thinking Intro - Guest Lecture with Angela McKee-Brown	Design Thinking is one process for generating creative solutions to problems or tasks.	Students see a presentation on design thinking from a guest lecturer.

Lesson 44: Design thinking sprint on school breakfast	Students apply the design thinking process to school breakfast. Students reflect on their experience with the process and how it supported them.	Students complete a design thinking sprint by interviewing their peers, defining the problem, ideating solutions, and giving and receiving feedback.
Lesson 45: Share and review ideas on school breakfast + quick cooking lesson + Prep for empathizing	Students learn the importance of giving and receiving feedback and iterating upon their concepts.	Students pair up groups and take turns presenting their ideas and providing feedback.
Lesson 46: Question Crafting, Interviewing, and Empathizing	Student learn about crafting questions and techniques for empathetic interviewing. Students learn how group dynamics are an important aspect in team projects.	Students begin drafting questions for their interviews. Students reflect upon their own preferences in group work and form groups.
Lesson 47: Empathetic Interviewing	Judgemental and leading questions limit the kind of information one is able to get through a survey or interview process. They are not a best practice in surveying and interviewing.	Students consider how different versions of a similar question can make interviewees respond and feel different. Students continue to draft their interview questions and plan their interviews.
Lesson 48: Define	Students will learn how to categorize and group the information they've gathered in interviews to help their design process.	Students share the insights from their interviews and create an empathy map to help them understand their user's needs and insights.
Lesson 49: Define cook	"How might we..." statements help turn insights into questions that promote creative thinking by offering different frames through which to view a problem.	Students will write their insights on a poster board and then craft "How might we..." statements for each insight.
Lesson 50: Ideate	Intentionally building an environment to support creative thinking can help teams to develop more innovative and appropriate solutions to problems. There are a variety of techniques that can be used to cultivate creative environments.	Students practice deferring judgements and putting ideas on the table. They complete the chart of insights, "How might we..." statements, and potential solutions.
Lesson 51: Ideate	The design and process of selection	Students will use rank choice

	processes influence the outcomes. Choosing a selection process or using multiple selection processes can be employed strategically to build desired outcomes.	voting, open discussion, and voting on superlatives for a variety of categories to explore how different selection processes can yield different results.
Lesson 52: Prototype	Prototypes are supposed to be built quickly and cheaply to test concepts and provide rapid useful feedback that can help with the next iteration of the design.	Students build conceptual prototypes of their project ideas and share them with their peers who offer feedback. Students revise their prototypes to incorporate the feedback.
Lesson 53: Evaluation and Project Proposals	Setting evaluation metrics to analyze project outcomes is an important part of project planning. Project proposals communicate key points including project goals, strategies, assessment plans, and projected budgets.	Students brainstorm and consider a number of metrics they could use to evaluate their projects. Students write a project proposal based on the Healthy Berkeley Grant proposal.
Lesson 54: Plan Project	Eliciting and responding to feedback is an important step in any project.	Students review teacher feedback on their project proposals and revise their plans to make their plans more complete.
Lesson 55: Plan Project	Action planning and assigning tasks to team members are useful strategies for project implementation.	Students map out the key next steps to bring their project to completion.
Lesson 56: Plan Project	Thorough planning and making sure that all members of a group are on the same page before implementing a project helps to ensure that project's success.	Students work in groups to complete their action plans.
Lesson 57: Offering and Asking for Help	Asking for help is part of strong teamwork. Offering and providing help is often easier than asking.	Student work groups discuss if and how they could use support. Students share project updates and ask one another for help.
Lesson 58: Launch Projects	Students have the capacity to design and implement meaningful change in the food system. Planning for implementation and	Students implement their projects according to their plans, collect data, and begin reflection and analysis.

	collecting metrics on the success of that implementation are strategies for making the impact greater.	
Lesson 59: Launch Projects	Students have the capacity to design and implement meaningful change in the food system. Planning for implementation and collecting metrics on the success of that implementation are strategies for making the impact greater.	Students implement their projects according to their plans, collect data, and begin reflection and analysis.

UNIT 6: CAREERS IN PUBLIC HEALTH

Goal: Students will be able to describe a number of public and community health careers and identify one or two that they consider as a potential career path. Students will be able to summarize workplace norms and demonstrate professional behavior in a variety of situations.

Overview: Students will hear from a number of guest speakers working in various capacities in the field of public health. Students will complete internships outside of class and report on their internships by highlighting key lessons learned through those workplace experiences.

Lessons	Key Content	Main Activity
Lesson 60: Eating Disorders	Anorexia nervosa and bulimia nervosa are the two most common eating disorders. Women and girls have a much higher incidence of eating disorders than men and boys.	Review a short presentation on eating disorders to learn some key concepts before the expert guest lecture on the subject. Students generate questions to ask Dr. Buckelew.
Lesson 61: Guest Lecture with Dr. Buckelew	Eating disorders are complex diseases that require careful treatment. Students experiencing an eating disorder should seek professional treatment. Disordered eating exists on a spectrum with diagnosable eating disorders at extreme end.	Students observe an Interview style guest lecture with Dr. Buckelew, an expert on eating disorders. Students ask questions following the interview.
Lesson 62: Project Reports	Project reports are an important tool for summarizing work completed and making recommendations for further work.	Students begin writing project reports summarizing their project. Students reflect on the successes and areas of potential improvement.
Lesson 63: Reflect and	Using academic language is an	Students tell the story of

Report	essential skill for presenting in formal settings. Practicing using academic language is the key to developing that skill.	their project to one another in pairs. Students utilize sentence frames to practice telling their story using academic language.
Lesson 64: Planning for the Community Celebration	Hosting an event and feeding a large group requires planning and consideration.	Students will design a menu and program for the evening that highlights what they've learned in the course.
Lesson 65: Internship Report Outs	What did you learn from your internship experience?	Students discuss their internships and compare experiences. Students share lessons learned and values gained.
Lesson 66: Reflecting on the Year	What do you remember from the course this year? What experiences made an impression? What did you learn?	Students brainstorm as a class the experiences and lessons that stuck out to them most from the year. They review the course outline in small groups as a reminder of everything they have covered.
Lesson 67: Mapping the Course	What did we do this year in this course?	Students work in small groups to create posters mapping their experiences and learning in the class.
Lesson 68: Preparing for Community Celebration	How would you like to share your learning and experiences from this year with your communities? What do you need to plan for in order to do this?	Students plan and prepare to host their families and class community for a closing dinner.
Lesson 69: Community Celebration	Gathering community around food is a powerful way to celebrate accomplishments and share stories.	Students host a dinner for their families and class community including guest speakers, volunteers, and administrators.
Lesson 70: Reflection and Course Assessment	Reflection and metacognition are important steps in learning and noticing changes in knowledge and behavior.	Students complete an end of year survey and evaluation that includes reflection on how their attitudes towards food and nutrition have changed.

Lesson 71: Reflection and Next Steps	What are you carrying forward from this course?	Students will complete an individual reflection and group share out on their personal takeaways from the course.

WHOLE KIDS FOUNDATION

WHOLE KIDS FOUNDATION IS ON A MISSION TO IMPROVE CHILDREN'S NUTRITION BY SUPPORTING SCHOOLS, INSPIRING FAMILIES AND EMPOWERING KIDS TO MAKE HEALTHIER FOOD CHOICES.

GARDEN GRANTS

Kids who grow food, know food- which is why we believe in the power of educational gardens!

In partnership with FoodCorps, our Garden Grant Program supports brand new or pre-existing edible educational gardens located at a K-12 school or a nonprofit organization with a $2,000 monetary grant.

IMPORTANT DATES:

Application Window: September 1 – October 15

Grant Notification: February of the following year

SALAD BAR GRANTS

When kids eat from a school salad bar, they eat 3x more fruits and vegetables!

In partnership with Salad Bars to Schools, the Salad Bar Grant program provides a salad bar equipment grant to a school.

Any school that is a part of the National Lunch Program is eligible to apply.

IMPORTANT DATES:

Application Window: Year-round

Grant Notification: As available on first-come, first-served basis

BEE GRANTS

Bees pollinate ⅓ of our food, making them an integral part of our food system!

In partnership with The Bee Cause Project, our Bee Grant program provides either a $1,500 monetary grant or an equipment grant of a bee hive to a school or a nonprofit organization.

IMPORTANT DATES:

Application Window: September 1 – October 31

Grant Notification: Mid-December

HEALTHY STAFF PROGRAM

Teachers are with our kids 8 hours of the day. That's why we love to support them as valuable mentors and change agents in kids' nutrition.

This free program provides a interactive class designed to empower teachers and school staff with nutrition inspiration and healthy cooking skills.

IMPORTANT DATES:

Enrollment is ongoing, with classes hosted on Professional Development days, after school or at a Whole Foods Market location.

CONTACT US:

Garden, Honey Bee & Salad Bar Grants: **Grants@WholeKidsFoundation.org**

Healthy Teachers Program: **Healthy.Teachers@WholeKidsFoundation.org**

*Explore **WholeKidsFoundation.org** to learn more about our programs, eligibility requirements and how to apply online.*

Calling all future organic farmers:

GRANTS AVAILABLE FOR ORGANIC EDUCATION!

If you are a...

K-8 teacher:

Get funds to incorporate organic into your classroom's project-based learning.

AWARD AMOUNT: Up to $1,000

PURPOSE OF AWARD: The CCOF Foundation and the California Foundation for Agriculture in the Classroom administer the *Look at Agriculture...Organically!* grant program for K-8 teachers who educate their students about organic agriculture in the classroom.

DEADLINE: Application period opens April 1, 2019 and closes May 6, 2019.

High school student:

Get a grant for your organic FFA Supervised Agricultural Experience (SAE) project.

AWARD AMOUNT: $1,000

PURPOSE OF AWARD: The CCOF Foundation gives grants to help high school students cover the expenses of conducting FFA SAE projects using organic production methods.

DEADLINE: Application period opens September 5, 2019 and closes November 15, 2019.

Higher education or vocational student:

We can help you pay for your studies in organic agriculture.

AWARD AMOUNT: $2,500

PURPOSE OF AWARD: The CCOF Foundation gives grants to higher education and vocational students pursuing organic agriculture programs to help with tuition and educational expenses.

DEADLINE: Application period opens April 1, 2019 and closes May 6, 2019.

Learn more and apply today at www.ccof.org/fofgf »

The Future Organic Farmer Grant Fund is a program of the CCOF Foundation that is growing the next generation of organic farmers by investing in their education. Meet some of our previous grant recipients at **www.ccof.org/future-organic-farmers**.

The CCOF Foundation is part of CCOF (California Certified Organic Farmers), a nonprofit organization based in Santa Cruz, California. CCOF advances organic agriculture for a healthy world through organic certification, education, advocacy, and promotion. We envision a world where organic *is* the norm. Learn about CCOF at **www.ccof.org**.

SPECIAL THANKS TO OUR FUTURE ORGANIC FARMER GRANT FUND SUPPORTERS!

Annie's, Bradmer Foods, Clif Bar Family Foundation, Driscoll's, Organic Valley, UNFI Foundation

Awe Sum Organics, Bejo Seeds, Blue Marble Brands, Bonterra Organic Vineyards, CCOF Processor/Handler Chapter, Chino Valley Ranchers, Dr. Bronner's, Duncan Family Farms, Farm Fresh to You/Capay Organic, Green Hope, Heath & Lejeune, Independent Natural Foods Retailers Association, Sun Basket, True Organic Products, Wawona Packing, Wild Roots Market

3.22.19

www.ccof.org | ccof@ccof.org | (831) 423-2263