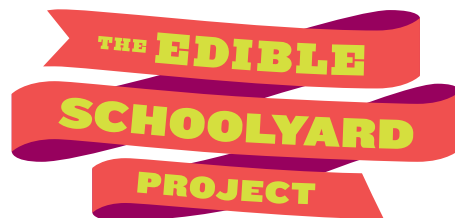


2016 - 2017

Edible education can
transform the schooling
experience for every child

Curriculum Overview



The Edible Schoolyard Curriculum Overview

INTRODUCTION

For the last 20 years, the Edible Schoolyard in Berkeley, CA, has been a place where the children fall in love with food and learning.

In the kitchen classroom, the teachers cook, the cooks teach, and teacher and student alike gather around the table to share meals of their own creation. In the garden, students are the keepers of the soil and shepherds of the harvest, sowing seeds and tending to the produce that fills bellies and fuels exploration, imagination, and learning. Students learn by doing and engage all of their senses.

THE EDIBLE SCHOOLYARD PROJECT ENVISIONS GARDENS AND KITCHENS AS INTERACTIVE CLASSROOMS FOR ALL ACADEMIC SUBJECTS AND A FREE, DELICIOUS, ORGANIC, AND LOCAL LUNCH FOR EVERY STUDENT.

Inspired by innovative ideas in school reform, creative theories in child development, and pioneering educational philosophies (from the approaches of Montessori to Dewey to Reggio Emilia to Maslow, Piaget, Vygotsky, and Gardner), our model is rooted in inviting the whole child to engage with the world as a classroom with infinite potential for discovery and growth. We believe that integrating an edible education curriculum into all schools can transform the schooling experience for every child in the United States, and that doing so would be revolutionary. The Edible Schoolyard Project envisions gardens and kitchens as interactive classrooms for all academic subjects and a free, delicious, organic, and local lunch for every student.

To that end, the goal of this book is to share our theory and practice of how to transform the schooling experience for every student. At the heart of our approach is our curriculum; it is our main tool for

bringing the vision of edible education to life in the classroom. In this book, we have shared the theory behind our approach, the strategies and practices we use in implementation, and the lessons we teach in our kitchen and garden classrooms. It is our belief that any garden or kitchen classroom should reflect the unique needs, resources, and culture of a place. It is not our goal to create programs identical to the Edible Schoolyard in Berkeley—these lessons are meant to be instructive, adaptable, and flexible.

What Is an Edible Education?

Our principles of edible education lay out the transdisciplinary 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 caretaking. 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 educated—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 not only address the critical social inequities of hunger and obesity, we 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. This reinforces children's understanding of where their food comes from and how important it is for human beings to take care of the land, for the future of the planet.
7. The cafeteria is the heart of the school. Every day, students discover how the ritual of eating together at the table expresses the essential 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. They feel valued and understand what it means to give others that gift.

The Edible Schoolyard History

The US primary and secondary educational system has been ideologically extolled throughout history, and admired the world over, for its potential to create equal opportunity for all young people. Educational opportunity is often cited as a cornerstone of this country's democratic strength and resilience.

At the same time, it has been a persistent challenge for our nation to live up to the noble ideals enshrined in this educational pledge, especially (though not only) in our public schools. We have struggled, often valiantly, to make these promises a reality, but continue to fall too far short of universally achieving them. If we are to make true progress, we must face the ways in which the US educational system has maintained a stratification of students on the basis of class, race, and gender.

From Thomas Jefferson's 1814 proposal for two different tracks to educate the "laboring and the learned" to the institution of "zero tolerance policies" in the last two decades and the resulting school-

to-prison pipeline, our educational system has not only failed to live up to the promises of a just democracy, it has effectively targeted for failure and marginalized specific communities and groups. Once institutionalized, gross racial and socioeconomic disparities in education, health, and opportunity have been often viewed as inevitable, greatly bemoaned but also widely condoned.

Twenty years ago, in 1995, Alice Waters created the Edible Schoolyard Project to address our educational system's failure, in Waters's words, to "make our schools the place of equality." Waters brought to her mission the dual perspective of a trained Montessori teacher and fervent political activist—along with an already renowned reputation as a gifted chef and champion of sustainable agriculture. She grounded her vision in first principles: that children deserve to be nurtured in body and mind, treated with dignity, and shown that they are valued.

Waters proposed the creation of a school-based program, fully integrated with the academic curriculum taught in US public schools, that would begin by serving the most basic needs of children, their families, and their communities. Her idea was simple, and profound: awaken children's senses and appetites, invite them into a relationship with fresh, flavorful, healthy foods, and connect their academic studies with the natural world in garden and kitchen classrooms. Make every detail important, she added, emphasizing respect for the children's surroundings. In such environments, they would instinctively feel welcome and want to learn—and they would develop confidence in their abilities and their futures.

Waters founded the first Edible Schoolyard at the Martin Luther King Jr. Middle School, in her hometown of Berkeley, CA, in close partnership with the principal and members of the school community. Over time, she took to calling her vision for all schools "edible education."

Between 2005 and 2010, the Edible Schoolyard Project identified locations for and co-created six

other "Founding Edible Schoolyards," in New Orleans; San Francisco; Los Angeles; Greensboro, NC; New York City; and Lake Placid, NY—with the goal of demonstrating that edible education is a universal idea, applicable and adaptable to any community, climate, or set of circumstances.

The results have been transformational for Edible Schoolyard Project students and communities. When schools nourish health and social well-being in tandem with academic goals, and when they extend their mission to include families and the wider community, we see that students respond and excel across a spectrum of criteria. Moreover, they become leading agents of change: they take on the challenges of addressing—even repairing—inequality in their communities and, in broader terms, understanding the critical relationship between human beings and the natural world.

The Edible Schoolyard Project is dedicated to modeling success through daily on-site practice of the pedagogy and through strong advocacy for edible education for all. At the same time, we work to highlight the failures and injustices that prevail in our educational system—recognizing that we ourselves are operating within and are part of that system. We are committed to continually deepening our awareness and analysis of our own organizational privilege and particular visibility in this field, and to reflecting on how we lead and support the capacity development of others, with an emphasis on humility, curiosity, openness, and reciprocity.

In the summer of 2009, the Edible Schoolyard Project held the first Edible Schoolyard Academy, to train educators in the theory and practice of edible education. The ESY Academy is now the leading professional development and capacity-building program in its field. In 2012, we launched the online Edible Schoolyard Network, to engage, unite, and represent edible education programs around the country and the world. In that first year, 500 programs joined the free ESY community hub,

which has since grown tenfold, to more than 5,500, galvanizing edible education leaders as a critical force for movement-led change.

Current Program Areas of the Edible Schoolyard Project

The three main programs of the Edible Schoolyard Project embody and cultivate our mission: ensuring an edible education for every child in public school.

EDIBLE SCHOOLYARD BERKELEY—The garden, kitchen, and cafeteria at King Middle School serve as a demonstration site and innovation hub for the edible education curriculum and pedagogy. For 20 years, we have worked closely with the whole school community to connect a one-acre teaching garden and a dedicated kitchen classroom to the science and humanities curricula taught to all students. Evening family classes invite parents and trusted adults to learn with and from their students. Across the playground, the larger cafeteria kitchen prepares delicious school meals from scratch for all public school students in Berkeley, using fresh, local, seasonal ingredients. More than 1,500 visitors tour the program every year to learn by example. Many of these visitors return to attend an Academy session and/or go on to launch a program in their community and link it to the ESY Network. ESYB has nine full-time staff and one AmeriCorps service member. Three staff and our AmeriCorps member work in the garden, four staff in the kitchen, and two staff in the office. Kitchen and garden staff are responsible for planning and teaching daily classes, maintaining the kitchen and garden spaces, managing volunteers, developing and documenting curriculum, and running our Family Nights Out program, our High School Internship program, and our 8th grade IWE (Independent Work Experience) program. In addition to our school-year programming, all ESYB staff collaborate to plan and facilitate the ESY Academy and ESY Intensive, two professional training programs we offer each summer for educators, service workers, and administrators in the field of edible education.

EDIBLE SCHOOLYARD TRAININGS—In our summer professional development programs and short courses, we empower other educators to create and sustain similar programs in their home communities. Our goal is to help schools develop strong edible education programs rooted in shared values and standards of practice, responsive to the cultural, institutional, and funding realities of their own particular contexts. In eight years, we have trained 580 teachers, administrators, food service staff, nutritionists, and parents from over 250 schools worldwide, representing more than 780,000 students in 39 US states.

EDIBLE SCHOOLYARD NETWORK—The ESY Network at edibleschoolyard.org is a thriving public forum for the edible education movement, a community hub where teachers, parents, school administrators, cooks, sustainability advocates, education-oriented nonprofits, community farmers, and others come together to swap ideas, resources, and inspiration. On the ESY Network site, you can find a simple and delicious recipe called Greens over Grains and instructions for worm-bin composting. You can find lesson plans that integrate multiplication with gardening or teach the history of the spice trade accompanied by cooking curry. Many lessons are aligned with Common Core and Next Generation Science Standards. All resources are community-generated and available for free. Network membership has grown by thousands each year since its 2012 launch, suggesting we have tapped into a wellspring of energy that will continue to build momentum. Today, over 5,500 programs belong to the Network, from 50 US states and 57 countries, serving more than nine million students.

King Middle School and Edible Schoolyard Program Overview

The Edible Schoolyard kitchen and garden classrooms are located at King Middle School, one of three public middle schools in Berkeley, CA. Some 1,050 students in grades 6, 7, and 8 attend King Middle School; all of them attend classes at the Edible Schoolyard

each year. Students at King come to the kitchen and garden as an integral part of their academic school day. In general, students come to the kitchen with their humanities classes and to the garden with their science classes, though occasionally they may come with math, art, or elective classes as well. Over the course of three years at King, a student will have 75 classes in the garden and kitchen classrooms. Of King's 1,050 students, 45% qualify for free or reduced lunch, 13% are enrolled in the English-language development program, 13% have special needs, and 35% are White, 21% Black, 21% Asian, and 15% are mixed race or "other."

The Edible Schoolyard Curriculum

Our curriculum is where our theory of edible education comes to life; the content of our lessons and how we teach them comprise our main strategies for implementing our theory of edible education in the classroom. At ESY Berkeley, we have piloted and tested lessons and best practices for over 20 years. All of our work—and the reasoning behind it—is posted online for the Edible Schoolyard Network community and shared in our ESY Trainings. We have designed our curriculum for middle school students to meet the edible education learning goals outlined in the Edible Education Framework. The Edible Education Framework serves as a guide to translate the theory into practice.

An edible education places the child at the center of their learning and uses food to engage all aspects of the child's 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. This curriculum makes intentional academic connections that allow a student's full learning experience at school to become more relevant and engaging, and supports their academic achievement by bringing academic subjects to life. Even more broadly, this curriculum aims to develop curious, engaged learners who demonstrate: a sense of curiosity and dignity; the ability to work as a team to complete a job well; respect for oneself and others; an appreciation for diversity and an ability to learn from differences; and an understanding of how engaging with the food we eat can teach us, crystallize connections between anyone and anything, and cultivate relationships that make our families and communities resilient.

We hope these lessons prove helpful tools to you as you work to bring your own vision, whatever that may be, to life in your community.

Philosophy and Pedagogy for Equity

Equity is both a means and an end in edible education.

Edible education holds unique possibility to address a number of student needs that are not met or reflected in traditional curriculum or pedagogical practice. This is particularly important for engaging students who face systemic marginalization or who may be coping with trauma. The ever-present stresses of poverty, poor health, hunger, social isolation, discrimination, and violence can obstruct a child's focus on school, making it even harder to thrive in a traditional classroom setting. Edible education connects the experience of school to the real, lived experiences of our students.

A decade of social science research demonstrates that, overall, garden and kitchen programs improve a sense of belonging at school, nurture positive relationships with teachers and trusted adults, boost motivation and sense of satisfaction, and improve physical and emotional health. Studies at our flagship program in Berkeley found that edible education produced significant gains in the development of a cooperative school culture, increased academic engagement, improved students' sense of belonging in their school community, and increased consumption of healthy foods. Each of these outcomes is crucially important to our work to build a more equitable world.

In working for equity in the classroom, student experience is at the center of every decision we make. We intentionally design our classroom environments to communicate to children of every background that they belong and that they have been considered when creating the space—the crops we plant, the recipes we cook, and the artwork on

the walls depict a wide range of cultures and food traditions. The rewards of gardening, cooking, and eating are accessible and inclusive, and we ensure that our lessons and our pedagogy draw upon and promote the range of strengths of all different kinds of learners: visual and physical, independent and collaborative, in quiet repetition and in noisy activity.

In addition to making our spaces and lesson plans inclusive, 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

EDIBLE EDUCATION CONNECTS THE EXPERIENCE OF SCHOOL TO THE REAL, LIVED EXPERIENCES OF OUR STUDENTS.

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, that making mistakes and having the opportunity to get hurt in small ways are the foundation of keeping us safe later in life. But at 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 safe, happy, seen, respected, and engaged tend to 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 that prove invaluable to the conflict’s resolution. Of course, this too becomes an approach to equity—when a classroom culture is able to disrupt traditional dynamics that too often identify students of color, especially boys, as having “behavioral issues,” everyone in the classroom community benefits.

Practices of Edible Education

The following is an overview of the foundational 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 practice, from Berkeley's Lawrence Hall of Science BEETLES program, invites students to focus on an object from nature and share with a partner, in alternating succession, what they notice about the object. Then, when instructed, they switch to what they wonder, and finally what the object reminds them of. 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. Questions encourage students to take ownership of their learning process, rather than looking to teachers as the source of knowledge. 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

HELP STUDENTS SEE THAT BUILDING SKILLS IN EDIBLE EDUCATION WILL PREPARE THEM FOR A LIFETIME OF LEADERSHIP, HEALTH, COMMUNITY-BUILDING, AND LEARNING!

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; help students see that building skills in edible education will prepare them for a lifetime of leadership, health, community-building, and learning!

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.

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

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?

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.

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

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

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. And around and around! Lesson development and revision is ongoing, nonlinear, and iterative.

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 (What 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:



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

A Typical Garden Class

“Typical” No More

Until 2015, a typical garden class at the Edible Schoolyard followed the same format for all three grades: Students came to the garden for approximately 90-minute periods about once a week for three-to-eight-week rotations. In 2015, King adopted a new class schedule for seventh and eighth graders that changed the typical weekly layout for how often and for how long we could see these students in the garden. In order to maximize time with students under the new schedule, we developed an entirely new format for seventh- and eighth-grade garden curriculum called “Immersion Weeks.” In Immersion Weeks, students come to the garden with their science class every day for one week. We still use the more traditional format in our sixth-grade lessons. Below, we first outline a typical garden class with sixth graders, and then a typical “Immersion Week” format we use with seventh and eighth graders. In both formats, every garden class integrates a common set of rituals and routines. This allows students to know both what to expect and what is expected of them every time they come to the garden.

A Typical Sixth-Grade Garden Class

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.

1. OPENING CIRCLE (7-12 MINUTES)

- ▶ A typical garden class begins in the Ramada with an Opening Circle. At the Opening Circle, we 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 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.

2. 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. Occasionally a classroom teacher will also lead a working group. Working groups walk from the Ramada to their job site.
- ▶ Lead a small-group check-in: Have each student answer a check-in question. Check-in questions should be fun, interesting, easy to answer briefly, and answerable by all. They may or may not have anything to do with gardening or the lesson theme. The goal of a check-in is to hear everyone’s voice.
- ▶ 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. 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.

- ▶ Get the necessary tools and gear from the toolshed: 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. Our most common garden jobs are:
 - ▶ Composting (e.g., building a new pile or turning an old one; sifting fresh compost; harvesting worm castings)
 - ▶ Cultivating (e.g., preparing a bed for planting; building a new bed; pulling out crops; chopping and turning a cover crop, etc.)
 - ▶ Harvesting (e.g., harvesting produce to be used in a kitchen lesson or Family Night Out evening class; preparing or cooking a tasting for Closing Circle; making flower bouquets for students to bring home or for decorating the kitchen classroom; harvesting herbs to dry for tea or flowers to dry for an art project, etc.)
 - ▶ Propagating (e.g., direct sowing in the garden; sowing or upsizing in the greenhouse; transplanting from the greenhouse to the garden; grafting; working with cuttings; making soil mixes for plant starts, etc.)
 - ▶ Caring for garden infrastructure (e.g.,

constructing and deconstructing trellises and fences in the garden, mulching pathways, painting signs for crops, etc.)

- ▶ Visit a lab or breakout session: Many of our lessons that focus on specific scientific concepts—as opposed to broader cross-cutting concepts and practices that students develop every time they visit the garden—include a lab or breakout session that work groups rotate through during the work period. One example is the greenhouse lab, in which each working group takes a turn in the 50-minute work period to visit the greenhouse and experience the 10-minute lab. Other times, labs like “Biology of Flower” may take the full working period, in which a class will experience them over the course of three to five weeks with a new group of 6 to 10 students engaging in the lab each week until every student in the class has experienced it.
- ▶ 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 intentionally 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. Open-ended exploration in the garden sparks student curiosity, inspires student buy-in, and provides invaluable opportunities for students to practice and develop their observation and inquiry skills. During this time 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.

3. CLOSING CIRCLE (10-15 MINUTES)

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. 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. Whenever we do tastings, one working group will spend time during the work time to prepare the tasting. They will harvest a seasonal fruit, vegetable, or herb from the garden (some examples are apples, oranges, kiwi, soft herbs, turnips, radishes, carrots, sorrel, kale), and then prepare and arrange the food beautifully. In a tasting, the working group that prepared the tasting will pass it out to all the students. We wait until everyone has been served to taste, encouraging students to use their other senses while they wait to enjoy what they are about to eat. After we have all eaten, each student takes a turn to share their name, and, depending on their grade level, either an observation or a simile related to the 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”).

Garden Immersion Weeks

In an Immersion Week, students come to the garden every day for a week. Our seventh-grade classes come for two weeks of immersion, one in each semester. Eighth-grade classes come for one week in the spring. Classes last 45 minutes to an hour on Monday, Tuesday, and Wednesday, and about 90 minutes on Thursday and Friday.

GARDEN TRACKS

Distinct from our typical sixth-grade lessons in which students choose from a variety of garden jobs as part of Opening Circle, in Immersion Weeks students choose one “track” to follow for the entire week even before they come to the garden. Each garden teacher designs a track based on their own interests, specializations, and the needs of the garden. In some cases, all the tracks will follow variations on a single overarching theme that connects to students’ academic learning. For example, in the first seventh-grade rotation, each track explored some facet of ecosystems. Immersion weeks are also an excellent opportunity to engage in project-based learning—many of our tracks culminate in a tangible goal.

SELECTING TRACKS

In the weeks before students are scheduled to come to the garden, garden teachers visit students’ science classrooms to present descriptions of each track option. Students then have the opportunity to indicate their personal preferences for which track they follow by ranking the options from top to least favorite. The voting process gives choice and flexibility to the students, which helps to inspire buy-in and set up the dynamics of the groups for success. Below is an example of a voting ballot we used for one 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: **1st** **2nd** **3rd** **4th**
(with Ms. Rachel)

Climate Change: **1st** **2nd** **3rd** **4th**
(with Mr. Geoff)

Gardening & Cooking: **1st** **2nd** **3rd** **4th**
(with Mr. Jason)

Mini-Habitats: **1st** **2nd** **3rd** **4th**
(with Ms. Tanya)

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

Immersion in the Garden

1. OPENING CIRCLE (5-8 MINUTES)

Just like our typical sixth-grade garden class, the first lesson of the week begins with an Opening Circle (thereafter students meet with their track groups in a designated spot). We use the Opening Circle to welcome students and frame the week. Garden teachers rotate the role of facilitating opening circle.

- ▶ 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.

2. IN THE FIELD

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

After opening circle, students break up into their track groups. Each group has an average of 6-8 students and one garden teacher.

- ▶ Check-in question and review of the week and the goals.
- ▶ On the first day, a meet-up spot in the garden is identified for the rest of the week.
- ▶ Each track group works on their goals and projects for the week.

3. CLOSING CIRCLE

(LAST 20 MINUTES OF THE FINAL DAY,
EITHER THURSDAY OR FRIDAY)

Immersion Weeks culminate in a Closing Circle. One group prepares a tasting, which tends to be more substantial and elaborate than the tastings in our sixth-grade classes—kale pesto on bread, salad wraps with fava bean puree, and oven-roasted carrots and beets are some of our favorites. The tasting serves as the centerpiece of the Closing Circle as groups have the opportunity to reflect and share with one another their experiences and successes from the week.

- ▶ The tasting is introduced and served in the Ramada. Students wait to eat until everyone has been served.
- ▶ Groups report back after the tasting. Each group has the opportunity to share thoughts, stories, successes, and learning from the week.
- ▶ We open the floor for appreciations and shout-outs, if time permits.

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.
- ▶ Examples of the tracks are shown in the Scope and Sequence take homes and help to illustrate all the standards being covered.

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: **1st** **2nd** **3rd** **4th**
(with Ms. Rachel)

Climate Change: **1st** **2nd** **3rd** **4th**
(with Mr. Geoff)

Gardening & Cooking: **1st** **2nd** **3rd** **4th**
(with Mr. Jason)

Mini-Habitats: **1st** **2nd** **3rd** **4th**
(with Ms. Tanya)

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

Sample Class Structure for Immersion Week

1. 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.

2. IN THE FIELD

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

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.

3. CLOSING CIRCLE

(LAST 20 MINUTES OF THEIR FINAL DAY, EITHER THURSDAY OR FRIDAY)

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.

ROTATION 1						
LESSON #	LESSON NAME/ OPENING ACTIVITY	MAIN FOCUS	CLOSING ACTIVITY	PRODUCE	ESY STANDARD	ACADEMIC STANDARDS
G6-0	Respect in the Garden In academic classroom	Setting behavior expectations	Students ask questions about the garden		Edible Schoolyard 1.0 In the Program: Techniques 2.7: Students follow a set of rituals and routines that help work go smoothly and develop into lifelong habits	BUSD's Behavioral Expectations ▲ Be safe ▲ Be respectful ▲ Be responsible ▲ Be an ally
G6-1	Garden Orientation / Card Hike	Meet staff, learn routines and systems	White board questions & conversation		Edible Schoolyard 1.0 In the Program: Concepts 3.9: Notice and appreciate beauty. We take ownership in pleasing and awakening our senses to communicate care and value, because beauty can deliver a message of optimism and expectation without saying a word.	Common Core: comprehension and collaboration grade 6
G6-2	Garden Work	Review "Respect in Garden," emphasize systems/ tool shed orientation	Tasting		Edible Schoolyard 3.0 In the Garden, grade 6: Tools 1.1: Identify, begin to use, and care for basic garden tools. Techniques 2.3: Decomposition Techniques 2.4: Harvest Techniques 2.5: Cultivation Techniques 2.6: Propagation	Common Core: comprehension and collaboration grade 6
G6-3	Compost Lab	Big ideas unit, cycles of matter, FBI	Tasting		Edible Schoolyard 3.0 In the Garden, grade 6: Techniques 2.3: Observe fungus, bacteria, and invertebrates in decomposition;	California State Standards: Ecology 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.

LESSON #	LESSON NAME/ OPENING ACTIVITY	MAIN FOCUS	CLOSING ACTIVITY	PRODUCE	ESY STANDARD	ACADEMIC STANDARDS
G6-4	Bees	Native pollinators, Bee hive exploration			<p>Edible Schoolyard 3.0 In the Garden, grade 6: Concepts 3.9: Observe the garden as a habitat for pollinators, understand the impact for pollination on our food supply, develop appropriate responses to them, and consider the multitude of habits throughout the garden.</p>	<p>MS-LS1-4: Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively. Clarification Statement: probability of plant reproduction could include transferring pollen or seeds.</p> <p>MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. Clarification statement: Examples of local environmental conditions could include availability of food, light, space, and water.</p>
G6-5	Greenhouse Lab	Energy and heat	TBD		TBD	<p>California State Standards: Ecology 6.5.a: Students know energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis and then from organism to organism through food webs.</p>
G6-6	Apple Cider	Seasonality, volume and displacement (as it relates to melting polar ice), and ratios (with press gears)	Cider tasting	20 lbs of apples per class 220 lbs total	<p>Edible Schoolyard 1.0 In the Program: Concepts 3.11: Understand seasonality by recognizing and enjoying foods at their peak of flavor and ripeness.</p> <p>3.0 In the Garden, grade 6: Techniques 2.4: Harvest and prepare crops with guidance, recognize the relationship between the kitchen and the garden, and learn the seed to table concept.</p>	<p>California State Standards: Number Sense 6.1.1: Write and solve one-step linear equations in one variable</p>

ROTATION 2						
LESSON #	LESSON NAME/ OPENING ACTIVITY	MAIN FOCUS	CLOSING ACTIVITY	PRODUCE	ESY STANDARD	ACADEMIC STANDARDS
G6-7	Welcome Back / Discussion of Seasonality / Re-Orientation	Seasonality, garden work	Identify one thing that has changed in the garden – tell your garden name		<p>Edible Schoolyard 1.0 In the Program:</p> <p>Concepts 3.11: Understand seasonality by recognizing and enjoying foods at their peak of flavor and ripeness.</p>	<p>Common Core:</p> <p>Grade 6, Comprehension and collaboration</p>
G6-8	Biology of a Flower / Up close look at pollen and the Honey Bee	Structures and Functions of a Flower	Tasting		<p>Edible Schoolyard 3.0 In the Garden, grade 7:</p> <p>Concepts 3.9: Observe the garden as a habitat for pollinators, understand the impact of pollination on our food supply, develop appropriate responses to them, and consider the multitude of habitats throughout the garden.</p>	
G6-9	Garden Work / Kale Pesto	Final celebration	Tasting of kale pesto on baguette and lemonade Students sit at the long table for closing circle and enjoy eating together	Per class: 5 baguettes, tripled kitchen lemonade recipe, doubled kitchen kale pesto recipe	<p>Edible Schoolyard 3.0 In the Garden, grade 6:</p> <p>Techniques 2.3: Decomposition</p> <p>Techniques 2.4: Harvest</p> <p>Techniques 2.5: Cultivation</p> <p>Techniques 2.6: Propagation</p>	<p>Common Core:</p> <p>comprehension and collaboration grade 6</p>

Respect in the Garden

Summary

In this 6th grade orientation ESY staff bring visual aids and props into the classroom to help orient students to the behavioral expectations in their upcoming garden classes. We use the district wide language of the 4B's (Be Safe, Be Respectful, Be Responsible and Be an Ally) adapted for the garden setting. It is important that students receive this orientation before they come out for their first hands-on garden class so they know what is expected of them.

Objectives

After this lesson, students will be able to:

- ▶ Explain the behavioral expectations in the garden using information on the 4B's poster as a guide
 - ▶ Demonstrate an emerging understanding of the Edible Schoolyard routines and rituals
-

Assessments

During this lesson, students will:

- ▶ Review the 4B's poster and share real life examples
 - ▶ Discuss how teamwork, collaboration and open-mindedness can be demonstrated in the garden.
-

Materials

- Live chicken
 - Assorted garden tools
 - Visual aid
-

Before You Begin

- Create the visual aid
- Collect and prepare all the materials

Procedures

1

IN THE CLASSROOM

1. Introduce yourself as one of the garden teachers here at school and ask students if they know the school's 4B's. Point out the visual aid, and explain that this is what the 4B's looks like in the garden.
2. Ask if there is a volunteer that is willing to read the "Be Safe" section of the visual aid to the group.
 - ▶ Ask if anyone has an example of why we ask students to ask before picking. Explain that asking before eating garden crops is critical to students' safety. Just because it's called the 'Edible' Schoolyard does that mean everything out there is edible?
 - ▶ Explain that the kitchen classroom needs to have enough food for planned lessons.
 - ▶ All crops taste best when they are ripe and ready to eat.
 - ▶ Point out that seasonal forage crops like raspberries, ground cherries or cherry tomatoes are exceptions to this rule: these are things that students are allowed to pick and eat without asking.
3. Ask if there is a volunteer that is willing to read the "Be Respectful" section of the visual aid to the group. Ask students to volunteer ideas of how they can show respect to insects, chickens, and each other. Demonstrate the safest way to catch, hold, and pet a chicken.
4. Ask if there is a volunteer that is willing to read the "Be Responsible" section of the visual aid to the group. Demonstrate how to use the tools responsibly and safely. Ask students what some of the possible consequences of using tools incorrectly or irresponsibly could be. It's also fun to demonstrate what NOT to do in your demonstration and ask students to give you feedback. Ex. "What's wrong with the way I'm holding this tool?"
5. Ask if there is a volunteer that is willing to read the "Be an Ally" section of the visual aid to the group. Ask students for suggestions on how they can be an ally in the garden and clarify as needed.
6. Introduce the ESY values that are especially applicable in the Garden: teamwork, collaboration and open-mindedness. Ask students how they can demonstrate these in the garden.
7. Ask students to contribute other ideas that could be included on the Respect in the Garden poster.
8. Encourage students to look for ways to demonstrate the 4B's in the garden.
9. Explain that this is our contract together and ask students to sign their name (in the air) saying we all agree these 4b's in the garden setting.

Vocabulary

- ▶ Team work
 - ▶ Open mindedness
 - ▶ Collaboration
-

Teaching Notes

We have found that a team of two works best to deliver this brief presentation (approx 20 min). One teacher goes over the poster and the other does the chicken and tool demonstrations.

It's really exciting for students to meet you, their garden teacher, in classroom and, of course, the chicken demonstration is a favorite.

By presenting this in classroom students are now ready for the hands on experience of their first garden class.

Connections to Standards

COMMON CORE, ENGLISH LANGUAGE ARTS & LITERACY, GRADE 6

- RI.6.7** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

CALIFORNIA STATE, ENGLISH LANGUAGE ARTS, LISTENING AND SPEAKING, GRADE 6

- 1.0** Students deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. They evaluate the content of oral communication.

EDIBLE SCHOOLYARD IN THE PROGRAM, TEAMWORK AND COLLABORATION, GRADE 6

- 6.1** Students fully engage in structured groups to complete teacher determined tasks.
- 6.2** Students make a positive contribution to their small group.

EDIBLE SCHOOLYARD IN THE PROGRAM, OPEN-MINDEDNESS, GRADE 6

- 6.1** Students practice a willingness to suspend disbelief.
- 6.2** Students begin to take risks and try something new.
- 6.3** Students practice being open to sharing in fun.
-

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.

Resources

- Respect_In_The_Garden_Visual_Aid

RESPECT ON THE GARDEN

Teamwork & Collaboration

Open-mindedness

BE SAFE

- ALWAYS WALK
- USE PATHWAYS
- ASK BEFORE PICKING

BE RESPECTFUL

- DUCKS
- INSECTS
- CHICKENS
- EACH OTHER:

- hands to yourself
- one voice in circle
- appropriate language

BE RESPONSIBLE

THE RIGHT TOOL for the RIGHT JOB

CLEAN and PUT BACK TOOLS WHERE YOU FOUND THEM

BE an ALLY

Card Hike

Summary

In this 6th grade introductory lesson, students first encounter the garden as a classroom. They meet the garden staff, tour the garden, learn the basic systems and routines of the garden classroom, and are introduced to the Edible Schoolyard culture and expectations for learning in an outdoor setting. Students work together in small groups to explore the garden, pose questions and make discoveries.

Objectives

After this lesson, students will be able to:

- ▶ Find their way around the garden
 - ▶ Identify the garden staff and each other by name
 - ▶ Describe the garden, its basic infrastructure and routines
-

Assessments

During this lesson, students will:

- ▶ Tour the garden by participating in the Card Hike activity
 - ▶ Play the Garden Name Game
-

Materials

- Respect in the Garden Visual Aid
 - Job Board
 - Cards and stakes for the Card Hike
-

Before You Begin

- Create and hang the RIG poster in the opening circle location
- Create the Job Board
- Create and set up the Card Hike

Procedures

1

OPENING CIRCLE

1. Welcome students and introduce the Edible Schoolyard garden program.
2. Explain that the Ramada is part of the garden classroom, where all garden classes will begin and end with an opening and closing circle.
3. Introduce the garden staff.
4. Remind students about the Respect In the Garden (RIG) Poster and introduce the job board as a place where students can look to find out what's happening each day in garden class.
5. Referencing the "Job Board" by having students call out what the activity of the day is and briefly explain that today's activity is essentially a tour of the garden.
6. Finally, introduce the cowbell as the signal to finish activities, clean and put away any tools and head back to the Ramada for Closing Circle.
7. Divide students into groups and begin.

2

IN THE FIELD

1. Frame the card hike activity by telling students that this card hike will give them the opportunity to see many of the systems and infrastructures in the garden and orient them to the space.
2. Begin the Card Hike by leading your group around the garden from card to card. Explain that they will take turns in the reading of the cards. Two prompts that we want students to keep in mind while going through the card hike: #1 Ideas for the garden name game (looking for something garden related that starts with the same letter of your first name. EX. Mushroom Maiesha.) and #2 a place in the garden that they would like to return to and explore more in depth after the structured card hike activity. Each small group starts at various points along the hike, allowing each group to participate in the activity simultaneously with enough space between.
3. Once the structured card hike is completed, gather students in a circle and lead them through the name game. Tell students that this is the time to think back on the card hike and recall the names of plants, animals, or other various aspects of the garden. This reflection will be helpful in participating in the name game activity. Garden Name Game. To play, students introduce themselves by their first name followed by a word associated with the garden that begins with the same letter (Simona Sunshine, Iseah Iceberg Lettuce, and so on). Have students turn to their neighbor and come up with a garden name together (Think-Pair-Share), before sharing out to the group. Go around the circle giving each student the opportunity to share their own garden name. If someone is stuck and can't think of a garden name in the moment, ask students to help out their fellow classmate by taking suggestions, so that the person giving their name has options to choose from. As students share their garden name,

have everyone repeat the name fostering engagement and helping us all to learn the names of our classmates. Tell students that when they return to the Ramada, they will have the opportunity to share their garden name with the entire class, by participating in the Whip Around activity.

4. Frame the students 10 minutes of self-guided exploration time. Explain that they will have an opportunity to go anywhere in the garden that they would like to further explore. Explain that they will need to report back what they discovered, by bringing one question and one observation back to closing circle.

3

CLOSING CIRCLE

1. Welcome students back to the Ramada and lead them through the Whip Around activity, where students and garden teachers share their garden names and one of their observations or questions.
2. Multiple learning styles are used from visual aids, interactive team building games, listening and speaking, reading and verbal communication. Every student receives a similar experience.

Vocabulary

- ▶ Forage
- ▶ Job Board

Teaching notes

Biodiversity of plants and animals in the garden is emphasized in this activity. The concept of ecosystems and the caring for the natural world are expressed through an exploratory process, where students are given the opportunity to learn about the garden by the reading of a series of cards that leads them throughout the space. Having opportunities for each student to read is a great way of both increasing student talk time, use of academic language, focusing on listening, speaking and following directions.

The concept of foraging is introduced and potential crops are identified as crops students can eat without asking, fostering a sense of ownership with their school and school garden. With an emphasis on their 5 senses students are encouraged to sample crops like ground cherries, tomatoes, lemon verbena and mint.

Students are encouraged to explore on their own with one hope that they fall in love with the space.

RIG poster is reintroduced and behavioral expectations are highlighted.

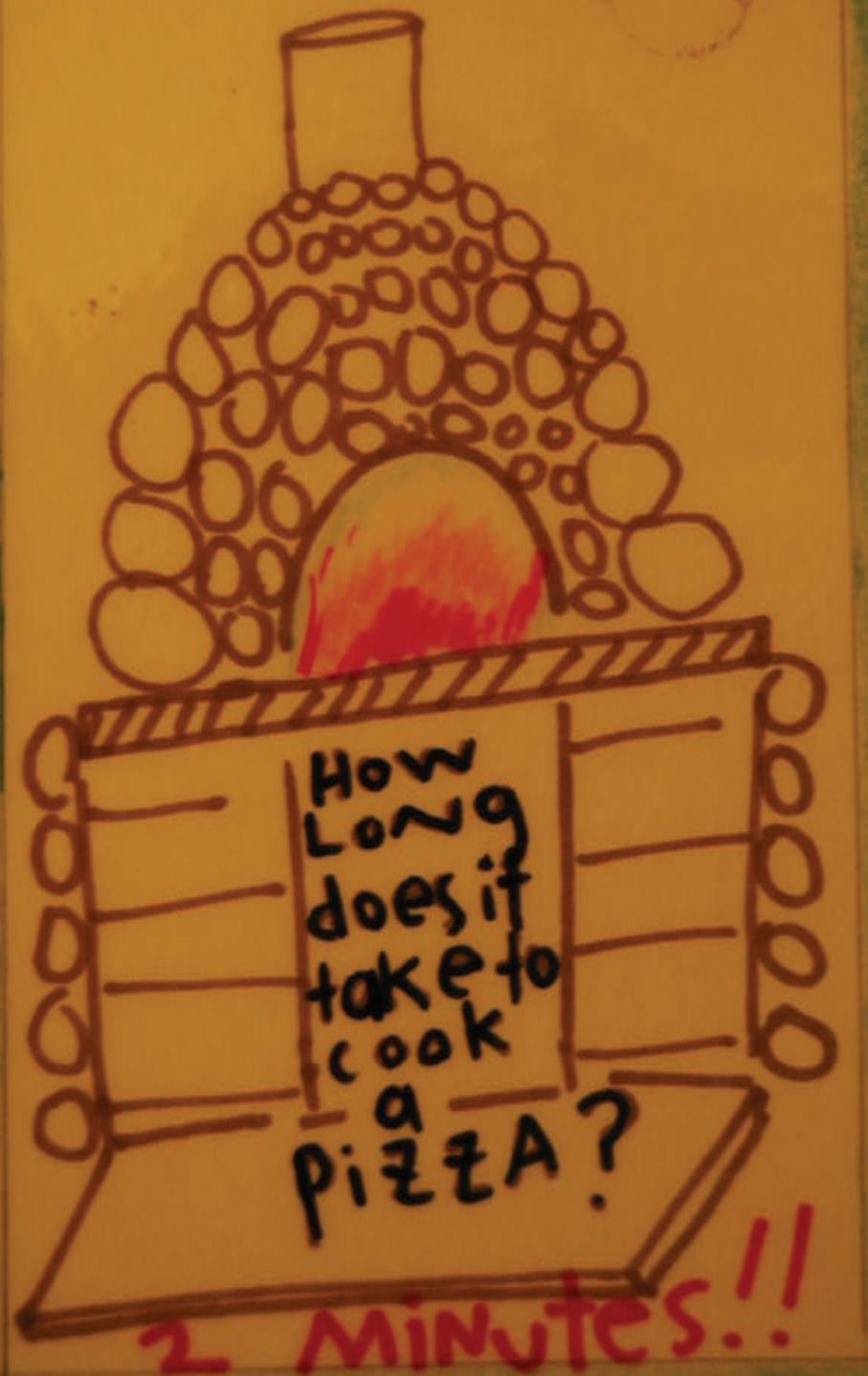
With the Garden Name activity, students formulate a garden name for themselves and communicate through a Think -Pair Share activity and Whip Around in the Ramada circle.

Connections to Standards

COMMON CORE, ENGLISH LANGUAGE ARTS & LITERACY, GRADE 6

- RI.6.7** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
- RH.6.7** Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts
- SL.6.1.c** Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
- SL.6.1.d** Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

26



What do you think you know about the garden?

• *I have seen _____ in the garden.*

• *I have heard that the garden has _____.*

• *Something that I think I know about the garden is _____.*

During today's self guided exploration,

I wondered this about the garden:

I observed this in the garden:

A Typical Garden Class

Summary

A typical garden class at the Edible Schoolyard is divided into three main parts: Opening Circle, In the Field (work time), and Closing Circle. In the garden, we have integrated rituals and routines into every garden class so that students know what to expect and what is expected of them when they arrive to garden class.

Objectives

After this lesson, students will be able to:

- ▶ Interact with the systems of the garden toolshed, use and put away any tools needed for garden tasks.
 - ▶ Enjoy a seasonal tasting from the garden.
-

Assessments

During this lesson, students will:

- ▶ Have a deeper understanding of the routines and rituals in garden class.
 - ▶ Practice using factual observations to describe their tastings.
-

Materials

- Job Board
- Respect in the Garden board
- Word of the Week board
- Sentence frame for tasting board
- Seating pads

Before You Begin

- ☑ Put the jobs of the day on the Job Board
 - ☑ Set up the Ramada with
 - ☑ Job Board
 - ☑ Respect in the Garden board
 - ☑ Word of the Week board
 - ☑ Sentence frame for tasting board
 - ☑ Seating pads
 - ☑ Open up and ready the toolshed for class
-

Procedures

1 OPENING CIRCLE

Students arrive to the garden and gather in the Ramada.

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

1. Introduce the day's activity or lesson.
2. Focus attention to the Job Board and exhibit team teaching.
 - ▶ From their seat in the circle, each garden teacher gives a brief description of the garden job they will be leading that day. The brief description of the garden job facilitates student buy-in by keeping students informed and allowing them to pick the garden job that interests them the most.
3. Introduce the closing circle activity so that students are prepared upon returning to circle.
4. Divide into working groups.

2 IN THE FIELD

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

1. Check in and review garden job at job site.
 - ▶ Have each student answer a "check-in" question.
 - ▶ Check-in questions should be provocative and fun and may not have anything to do with gardening.
 - ▶ These questions can relate to the lesson or theme of the day.
 - ▶ Invite a student to choose a "reflection card" for the group. The reflection cards are tools to help the group reflect on their own behavior during garden class. (Examples are: **Tools**, safe use, care, right tool for the right job. **People**, flexibility and maturity, inclusivity, respect and kindness.) Ask the student to read the chosen card aloud

to the group. Explain that during garden class today we will focus on this card and check in with ourselves at the end of class and see how we did. Ex. Did we use our tools in a safe manner? Did we clean them before we put them away?

- ▶ Break down the steps to executing the garden job and have students identify the necessary tools before going to toolshed.
2. Work together on your garden job.
 3. Integrate student buy-in by taking short breaks for foraging or stopping 5 minutes early and providing some self-guided exploration time.

3

CLOSING CIRCLE

We use closing circle in the garden to conclude the garden class with an assessment or activity.

1. **Tastings** are the most common closing circle activity:

Each student shares their name and, dependent on grade level, provides either an observation or a simile based on their tasting. Using a Think-Pair-Share activity, students share with each other and then volunteers share out to the whole group.

- ▶ Sixth grade: Students draw on their five senses to make an observation of the fruit or vegetable that is being tasted.

Example: My name is _____ and my apple was sweet.

- ▶ Seventh and eighth grade: Students draw on their five senses to create a simile about the tasting.

Example: My name is _____ and my apple was sweet like honey.

Seasonal tastings are picked from the garden.

- ▶ Some examples include apples, soft herbs, turnips, radishes, carrots, asparagus, kiwi, and sorrel.

2. **Report Backs**

Each working group updates the class on their respective garden job. A representative of each group:

- ▶ Describes the garden job
- ▶ Notes the progression of the garden job

Example: We finished cultivating the bed and it is ready for planting.

- ▶ Explains how the garden job contributes to the garden at large

Vocabulary

- ▶ Job Board
- ▶ Tasting
- ▶ Report Back

Teaching Notes

As garden teachers, we have established a set of rituals and 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.
- ▶ Ask check-in questions in small circle groups that set the tone.
- ▶ Ring the cowbell to signify clean-up and Closing Circle.
- ▶ Check in with classroom teachers after every garden class.
- ▶ Set high and clear expectations with the Respect in the Garden poster.
- ▶ Eliminate barriers to participation by providing protective gear like boots, gloves, aprons, kneepads, and ponchos to help everyone feel comfortable and prepared.
- ▶ 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 them 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.
- ▶ 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.

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 compost deconstructed: 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

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.

URLs

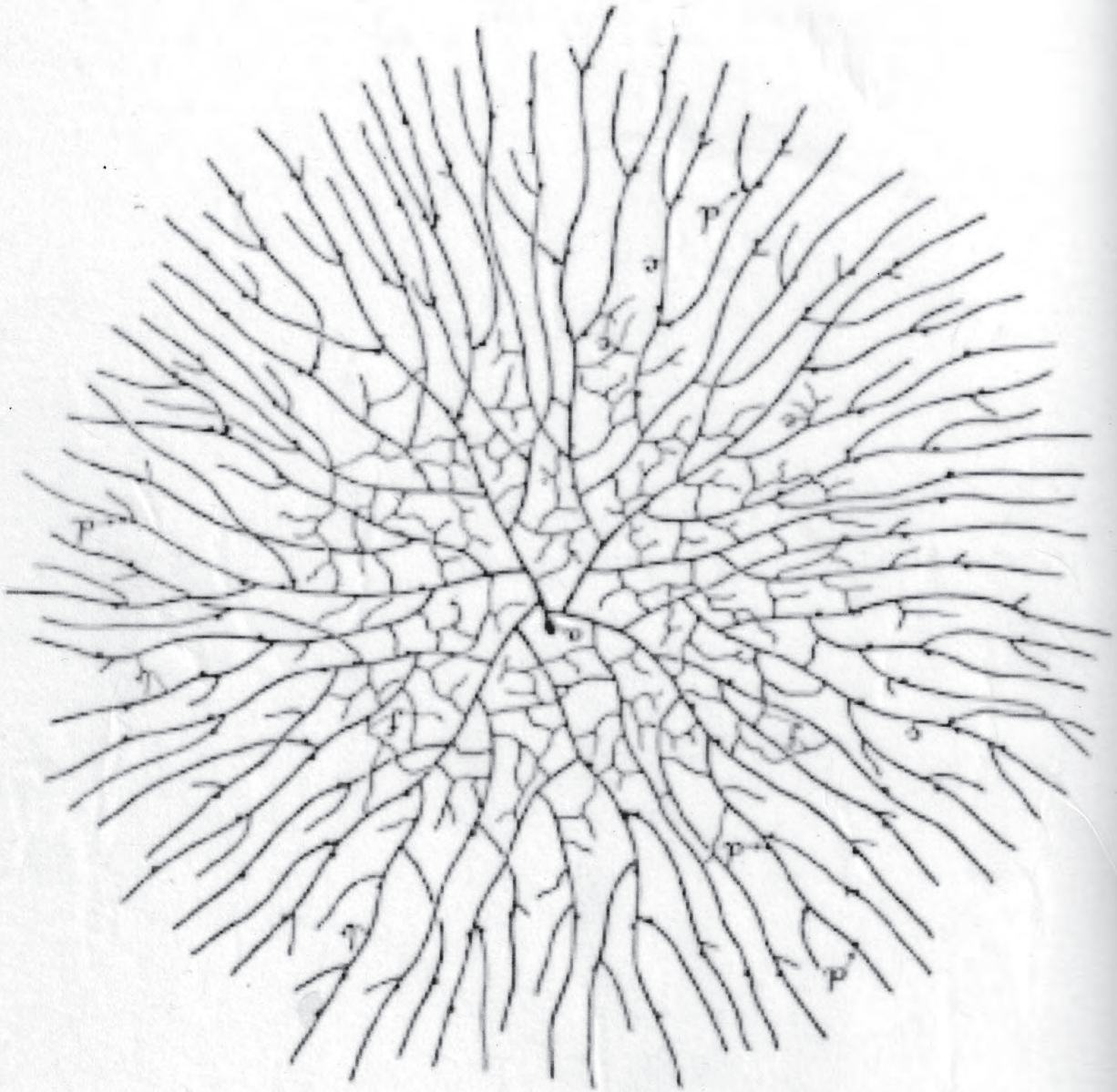
Read about this lesson in the ESY Berkeley Journal

<http://edibleschoolyard.org/esy-berkeley-journal/2011/09/28/viva-compost>

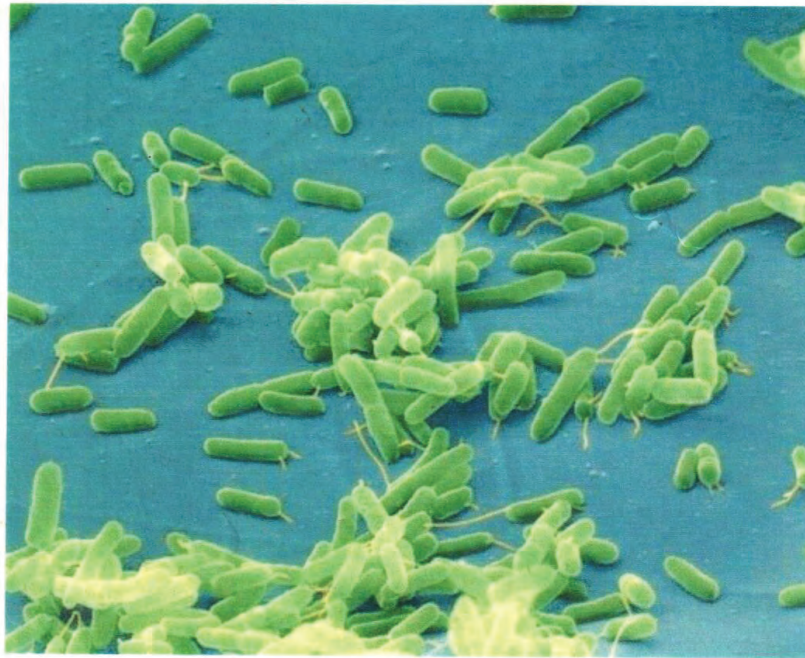
Resources

- Compost_Lab_Cake_Visual_Aid .pdf
- Compost_Lab_FBI_Images.pdf

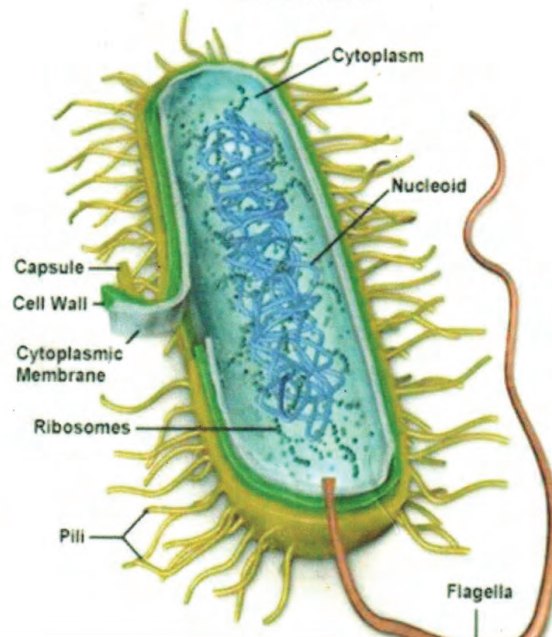
FUNGUS



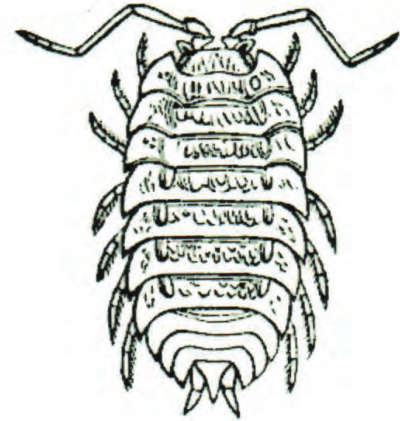
BACTERIA



Cell Structure



INVERTEBRATES



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:

Bees

Summary

In this lesson, students study bees in the garden and the important role of pollinators while rotating through three stations: Beehive; Catch, Observe, and Release; Honey Tasting.

Objective

Students will be able to:

- ▶ Feel comfortable around bees in the garden setting.
 - ▶ Explain the benefits of having a hive in the garden.
-

Assessments

Students will:

- ▶ Safely catch, observe, and release honeybees and native bees.
 - ▶ Discuss pollination, honey, and education as the benefits to having a hive in the garden.
-

Materials

HIVE STATION

- ☑ Visual aid card: life cycle of the bee
- ☑ Beehive
- ☑ Plexiglas box for observation, cloth to cover box, and tape to stabilize and keep box closed
- ☑ Table for observation with umbrella
- ☑ Pollen
- ☑ Smoker, matches, and cotton balls
- ☑ Bee hat

CATCH, OBSERVE, AND RELEASE STATION

- ☑ Insect nets
- ☑ Large jars for observing
- ☑ Visual aid cards

TASTING STATION

- ☑ Honeycomb
- ☑ 2 contrasting jars of honey for tasting (light and dark)
- ☑ Wooden stir sticks for tasting
- ☑ Bowl of sunflower seeds and serving spoon
- ☑ Fun fact cards

Before You Begin

- ☑ Find areas in the garden where students will be able to observe bees.
 - ☑ If you have a hive, check the health of the hive, pull out a single comb, and place it in the Plexiglas box then set it up on table at the hive station for observation by students.
 - ☑ Set up stations for catch and release, tasting, and hive.
-

Procedures

1 OPENING CIRCLE

1. Introduce the lesson and tell students that today they will learn all about bees.
2. Invite students to share something they already know or think they know about bees by participating in Think-Pair-Share.
3. Ask several students to share out to the whole group.
4. Explain that bees have three major interests: pollen, nectar, reproduction
 - ▶ Note that bees are not out to sting people.
5. Clarify when and why bees sting and review the warning signs before they sting:
 - ▶ Fly away
 - ▶ Buzz louder
 - ▶ Emphasize that stinging is the bee's last resort
6. Introduce the three stations and describe briefly what will happen in each one:
 - ▶ Hive station: students will learn about the colony and observe the bees at work on the honeycomb.
 - ▶ Tasting station: students will taste bee-related foods and learn about pollination.
 - ▶ Catch, observe, and release station: students will learn about both honeybees and native bees, then go out into the garden to safely catch, observe, and release bees.
7. Frame the Closing Circle question: "Why do we have a beehive in the garden?"

2 IN THE FIELD

BEE HIVE STATION

1. Explain to students that in this station they will first learn about the beehive and the role of the beekeeper. Then they will safely observe a honeycomb from the hive up close.
 - ▶ Ask students what type of behavior is best to have when approaching the hive (calm, relaxed, quiet).
2. Point out the flight path to students, drawing the analogy of a busy doorway, and explain the importance of keeping the flight path clear.

3. Explain that this is a top bar hive; the technique originated in Kenya and it mimics the way bees build their hives in nature. Compare it briefly to the Langstroth method of beekeeping, largely used by commercial beekeepers. Explain the different combs in each (one uses a foundation and the other starts with just the top bar).
4. Now that students know how to safely be around the hive, explain to students that the beekeeper has two main priorities:
 - ▶ Maintain the health of the hive by checking for parasites and intruders (other insects).
 - ▶ Monitor the growth of the hive by checking in on the amount of eggs that the queen is laying.
5. Explain that when entering the hive, two factors are crucial: protection and distraction.
 - ▶ Show students the bee hat and explain how the hat protects the face from any potential bee stings.
 - ▶ Show students the smoker and demonstrate its use while also explaining how the bees become distracted. The smoke gives bees the illusion of a fire. In order to survive the flight away from the hive, bees will begin gorging on honey and are thus distracted from the beekeeper's entrance.
6. Explain that the beekeeper must work fast to avoid heat escaping from the hive. Bees are cold-blooded and need the hive to be around 95 degrees Fahrenheit.
7. Show students how the bars line up, and explain how the bees build the honeycomb on the bar. Show students a honeycomb and pass it around while encouraging students to smell it.
8. Open the observation window and explain how bees build the honeycomb starting with the bar closest to the entrance.
9. Have students move to a separate table removed from the hive, where the observation comb is set up and ready for viewing. Remind students what type of behavior they should produce (calm, relaxed, quiet), emphasizing respect and no tapping of the glass window. Give students a chance to quietly listen to the hum of the bees before the next step. Let students know that there are two sides of the comb and that they should observe both sides by crouching down to its level. Allow a couple of minutes for students to observe and take note of what they see and produce questions. Once the time is up, ask students to raise their hand and take turns asking questions and making observations. Use the questions and observations to open up the conversation. If time allows, go over any other observations not mentioned or prompted by students.
10. Explain that there are three types of honeybees in the colony:
 - ▶ **Queen:** The queen's job is to lay eggs (she can lay up to 2,500 a day). The queen can live three to five years.

- ▶ **Drones:** The male bees are called drones. The drones mate with the queen, typically in flight, and die shortly after. The population of the drones in the hive is low compared to worker bees. Drones are kicked out of the hive as winter approaches.
 - ▶ **Worker bees:** They have the highest population in the hive and perform all of the following jobs: cleaning the hive, feeding the brood, attending the queen, receiving nectar and processing it into honey, building more wax comb, guarding bees, and foraging for nectar, pollen, and propolis.
11. Explain that bees forage by collecting nectar and pollen from many flowers, storing the nectar in their bodies and storing the pollen in their pollen sacs.
 12. Give students an opportunity to observe the pollen in the jar and, if they want, to taste a little.
 13. Explain that bees use the comb to store nectar, lay the eggs, feed the larvae, and make honey. Beginning with the area of the comb closest to the bar, point out the following:
 - ▶ Capped honey storage: bees can access the honey by poking a hole
 - ▶ Bee nursery: brood cells for the queen to lay eggs
 - ▶ Cells with nectar in them
 - ▶ Larva and drones
 14. Bees transform the nectar into honey by regurgitating the stored nectar and fanning it with their wings.
 15. Bees also collect propolis, sap from the trees that they combine with wax to seal the hive from intruders.
 16. Show students bee pollen and point out the different colors of the pollen.
 - ▶ Explain that different flowers have different-colored pollen and nectar, which affects the color of the honey.
 17. Explain to students how the queen bee is replaced in the hive.
 - ▶ The queen bee can die while mating.
 - ▶ When the queen is injured or old, the bees in the hive will pick 5-7 larvae to feed royal jelly in order to create the new queen bee.
 - ▶ Multiple hatched larvae can compete to be the next queen.
 18. Explain to students that bees communicate within the hive by doing the bee dance.
 - ▶ Dance in figure 8 loops.
 - ▶ Bees can communicate the direction of the nectar source through a defined angle from their abdomen to the sun.
 - ▶ Bees can communicate the distance of the nectar source through the length of the dance.

HONEY TASTING STATION

1. Explain to students that in this station, they will taste foods related to bees.
2. Ask students what their favorite fruit is and explain that without pollinators, those fruits would not exist.
3. Explain that the bee is an incredibly efficient pollinator but is not the only pollinator in the environment. Ask students for examples of different pollinators. Briefly explain pollination and define pollen as the genetic material from the male organ of the flower. Reference the three main interests of honeybees from the Opening Circle (nectar, pollen, and reproduction).
4. Taste sunflower seeds and explain that honeybees are the primary pollinators for sunflower seed production.
5. While students are enjoying the sunflower seeds, pass out honey fun fact cards and have students read aloud:
 - ▶ An average worker bee makes 1/12 tsp of honey in her lifetime.
 - ▶ To make a 16 oz. jar of honey, honeybees have to travel 112,000 miles and visit 4.5 million flowers.
 - ▶ Honey is antibacterial and contains 80% sugar.
 - ▶ Raw honey also boosts the immune system and soothes burns.
6. Ask students if they know what honey is made of and how and why bees make it.
 - ▶ Explain that worker bees collect nectar (sugar water or glucose). Have students recall that photosynthesis is the process by which all plants make sugar. Worker bees store nectar in their bodies and carry it back to the hive, where they then regurgitate it.
 - ▶ The nectar in the hive becomes concentrated through a process of evaporation and transforms into honey.
7. Pass out honeycomb tastings to each student.
8. Show students the two different types of honey and ask why they might look and taste different.
 - ▶ Explain to students that different flowers have different-colored pollen and nectar, which affects the color and taste of the honey.
 - ▶ Explain how honey can be flower specific.

CATCH AND RELEASE STATION

1. Explain to students that in this station they will learn about honeybees and native bees, then safely catch, observe, and release bees in the garden.
2. Review the three main interests of bees: nectar, pollen, and reproduction.
3. Explain that only a female bee can sting. The bee's stinger is in its oviduct, from which eggs are released. Male bees do not have stingers.

4. Delineate the difference between native bees and honeybees (different colony sizes, body types; bees native to the Bay Area are actually solitary whereas honeybees are social). Also observe the bees' fuzzy bellies and legs, which are ideal for collecting pollen.
 - ▶ Does the bee have pollen sacs?
 - ▶ Show images of honeybees and native bees.
 - ▶ There are 85 species of bees in Berkeley, 1,600 in California, and between 20,000 and 40,000 in the world.
5. Demonstrate how to catch and release bees while noting the following:
 - ▶ Bees can see the colors purple and blue best, so when looking for bees try plants with purple and blue flowers.
 - ▶ Bees do not fly downward very well.
6. After catching the bee, look to see whether it is a native bee or honeybee and whether it is female or male.
7. Explain to students that bees have been around for 130 million years and have co-evolved with flowers.

3

CLOSING CIRCLE

1. Have students answer the question "Why do we have a beehive in the garden?" by participating in a Think-Pair-Share activity. When students are done with their discussion, allow several students to share out to the whole group.
2. Answers include but are not limited to: so we can have honey; to have more pollinators (i.e. more fruit); an educational tool to teach people about bees.

Vocabulary

- ▶ Honeycomb
- ▶ Pollen
- ▶ Nectar
- ▶ Drone
- ▶ Queen bee
- ▶ Larva
- ▶ Native bee
- ▶ Honeybee

Teaching Notes

This lesson came about by seeing the need for people to feel comfortable in the garden setting. Students would often feel scared and “freak out” when they saw a bee. Through the power of educating ourselves, we believe that we can often overcome our fears about insects and learn to coexist, creating a more comfortable experience in the garden.

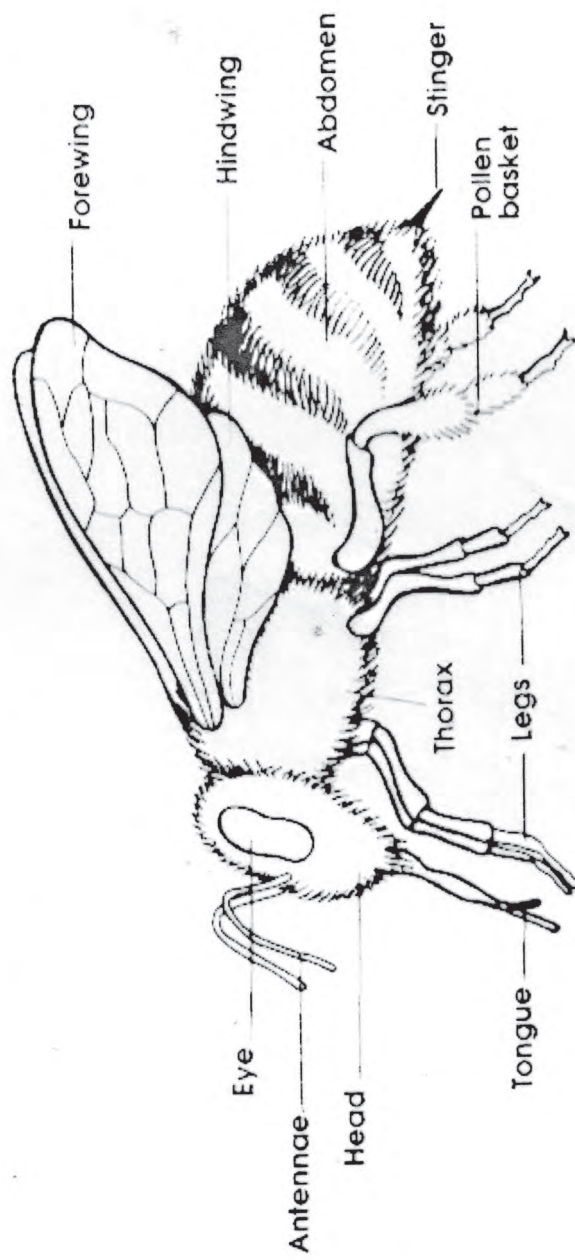
☑ Connections to Standards

EDIBLE SCHOOLYARD 3.0 IN THE GARDEN CLASSROOM, GRADE 6

Concepts 3.9 Observe the garden as a habitat for pollinators, understand the impact of pollination on our food supply, develop appropriate responses to them, and consider the multitude of habitats throughout the garden.

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.



The Body of a Honeybee.

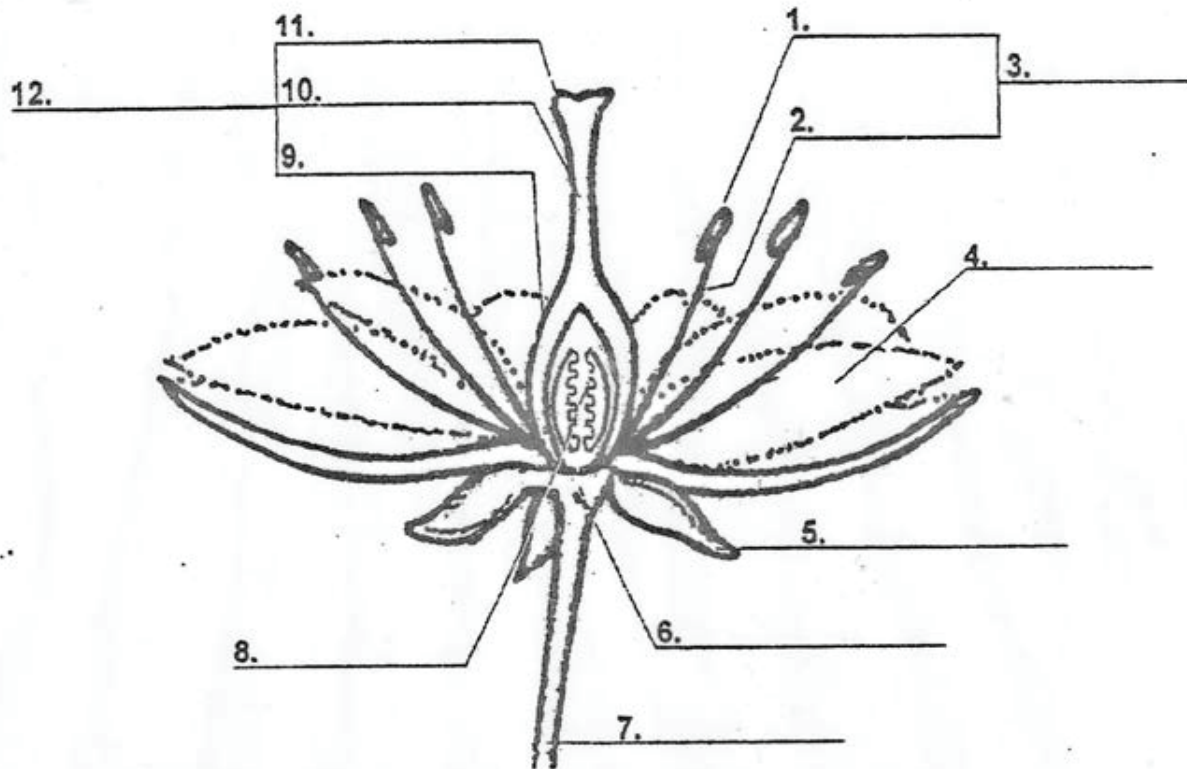
FLOWER ANATOMY SHEET

Using the following words, label the structures (parts) of the flower.

stigma
anther
filament
pedicel

petal
style
receptacle
ovary

ovule
pistil
stamen
sepal

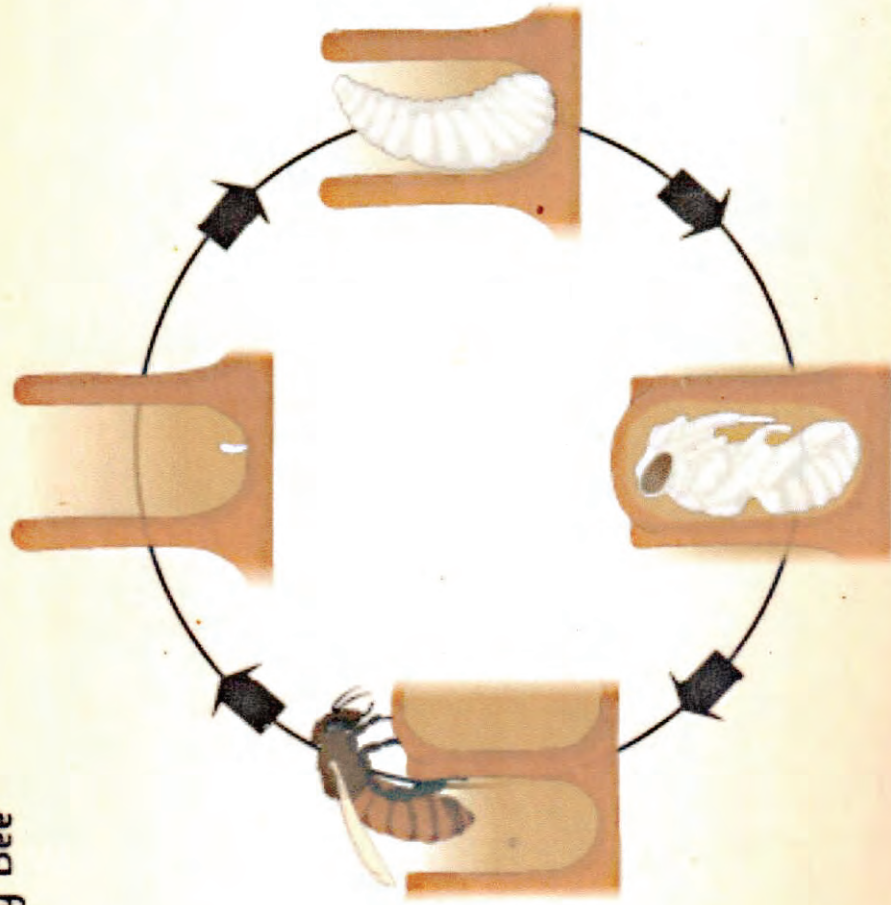


Using the definitions below, label the structures of the flower with the letter matching their function.

- A. Specially colored to attract potential pollinators
- B. thick and waxy modified leaves which act as protection for the developing flower
- C. female organ of a flower
- D. sticky surface at the top of the pistil; it traps and holds pollen
- E. tube-like structure that holds up the stigma
- F. when fertilized becomes a seed
- G. when fertilized becomes the fruit
- H. the pollen-bearing part of the stamen
- I. the stalk that holds the anther
- J. male organ of a flower
- K. part of the stem from where flower organs grow
- L. the stalk bearing a flower

The Life Cycle of a Honey Bee

life cycle
grow
growth
honeycomb
egg
larvae
pupa
bee
emerge



© Copyright 2013, www.sparklebox.co.uk

Honey Fun Facts

- An average worker bee makes 1/12 tsp. of honey in her lifetime.
- To make a 16oz. jar of honey, honeybees have to travel 112,000 miles and visit 4.5 million flowers.
- Honey is antibacterial and contains 80% sugar.
- Raw honey also boosts the immune system and soothes burns.
- Archeologists have found honey in the ancient tombs of the Egyptians.

*Why do we have a beehive in
the garden?*

Greenhouse Lab

Summary

In this sixth-grade science class, students will begin to understand what the greenhouse effect is and how it is connected to global warming.

Objectives

After this lesson, students will be able to:

- ▶ Explain the greenhouse effect.
 - ▶ Explain how the greenhouse effect contributes to global warming.
-

Assessments

During this lesson, students will:

- ▶ Experientially explore how greenhouse gases trap heat in the Earth's atmosphere.
-

Materials

- ☑ Reusable name tags for the students labeled "Heat" and "Greenhouse Gases"
 - ☑ Academic Language Sentence Structure written on whiteboard for Closing Circle/reflection
-

Before You Begin

- ☑ Make the reusable name tags mentioned in materials.
-

Procedures

1 AT THE OPENING CIRCLE

Welcome students and introduce the Greenhouse Lab. Let students know that they will be taking a break from their garden jobs today to visit the Greenhouse Lab.

1. Comment on the fact that they are studying Energy and Heat in their classrooms. We have a greenhouse in our garden – has anyone seen it or know where it exists?
2. We will be doing our Greenhouse Lab at the greenhouse today. Does anyone know how the greenhouse works?

Has anyone heard of the phenomenon called the “greenhouse effect”?

How is it connected to global warming?

3. Go over garden jobs and mention that in Closing Circle students will be doing a tasting and a Give One, Get One with two different sentence frames. Have a volunteer read out loud the sentence structure. Divide students up into small work groups.

2

IN GREENHOUSE AREA WITH SMALL GROUP

1. Direct students into the greenhouse itself for two minutes of exploration to experience the space. Inquire about any observations.
2. Gather the students together just outside the greenhouse and ask if there is a volunteer willing to explain in their own words what is going on in a greenhouse effect visual aid.
3. Explain that, as a group, we will act out this process. Assign them “roles” to act out the greenhouse effect. Have some of the students be “Heat” and others be “Greenhouse Gases.” (Just be sure that there are more “Heat” students than “Greenhouse Gases” students.) Hand out name tags and have students put them on. (Inform “Greenhouse Gases” students that they can choose what kind of gas they are for the game. The top 5 greenhouse gases are: water vapor, carbon dioxide, methane, nitrous oxide, and ozone.) Label the far side of the area the “Sun” and the area inside the greenhouse “Earth.” “Heat” students should stand at the “Sun” end of the space while just two of the “Greenhouse Gases” students should stand in the middle, outside the door of the greenhouse. Other “Greenhouse Gases” students can wait and watch on the sidelines.
4. Remind students that the sun produces heat waves that reach the Earth’s surface. Ask students to wiggle their arms in a wave motion to represent the oscillation of heat waves. At this time have the “Heat” students walk from one side of the space to the other, demonstrating heat traveling from the sun to the Earth.
5. Explain that most heat escapes back into space while gases in the atmosphere trap some of the heat. These “greenhouse gases” allow the Earth to stay warm and allow life to flourish. We’re using the word “trap” as that’s one way to scientifically explain it (have the “Greenhouse Gases” students point to the “Heat” student they wish to “trap” and say, “Trapped”). To demonstrate this, have the “Heat” students “bounce” off Earth and travel back to the other side of the space, but this time the “Greenhouse Gases” students each trap one “Heat” person, keeping them on the “Earth” side of the space, allowing the others to “escape.” Students need to be aware that the greenhouse effect is a beneficial, natural process and that without it the Earth would be too cold to sustain life.
6. Now introduce the idea that things are changing on Earth, and there are now more greenhouse gases. Have all the remaining “Greenhouse Gases” join the other “Gases” in the middle of the space. Ask the students to predict what would happen when more greenhouse gases are added to the atmosphere.

7. Again, have the original group of “Heat” students travel from the “Sun” side to the “Earth” side of the space. Then ask the “Heat” students to try to travel back to the other side of the space. The “Greenhouse Gases” students should then each trap one “Heat” student. Since there are many more “Greenhouse Gases,” more “Heat” will be trapped on Earth, with very little, if any, “Heat” escaping. This is how global warming happens.
8. Walk and Talk back to your garden job. Students should be partnered for the Walk and Talk: how do greenhouse gases get into our atmosphere? When you reach your destination (take the long way if necessary to give students more time to talk), have a quick circle up to share out what was just talked about on the walk. Facilitate a discussion on the difference between human vs. natural contributions to greenhouse gases: human impacts such as fossil fuel combustion, and natural processes such as changes in incoming solar radiation, volcanic activity, or forest fires (cow farts is a popular one). The top five greenhouse gases are: water vapor, carbon dioxide, methane, nitrous oxide, and ozone.

3

CLOSING CIRCLE

1. On a white board have, this sentence structure for students to use as they reflect on the lab:

“At opening circle I thought _____, and after going through the greenhouse lab I now think _____.”

Vocabulary

- ▶ Greenhouse effect
- ▶ Global warming
- ▶ Greenhouse gases

Teaching Notes

We have found this game effective and fun in conveying the concept of the greenhouse effect. While it is not essential to do it in or near a greenhouse, it sure does make it more interesting.

We designed the game as something that allows you to participate interactively with the concept of the greenhouse effect but doesn’t devolve into students grabbing or holding each other.

☑ Connections to Standards

NGSS

- MS-ESS3-5.** Ask questions to clarify evidence of the factors that have caused the rise in global temperatures of the past century.



Top 5 Greenhouse Gases

water vapor

carbon dioxide

methane

nitrous oxide

ozone

**Greenhouse
Gases**

**Greenhouse
Gases**

**Greenhouse
Gases**

**Greenhouse
Gases**

**Greenhouse
Gases**

**Greenhouse
Gases**

**Greenhouse
Gases**

**Greenhouse
Gases**

Heat

Heat

Heat

Heat

Heat

Heat

Heat

Heat

How do Greenhouse Gases get into our atmosphere?

*At opening circle I thought _____, and
after going through the greenhouse lab I now
think _____.*

*I think my garden job of _____ is related
to global warming because it _____.*

Apple Cider

Summary

In this sixth-grade seasonal lesson, students use teamwork to collectively press cider and learn about apples.

Objectives

After this lesson, students will be able to:

- ▶ Recognize seasonality in apples.
 - ▶ Formulate an observation of the cider.
 - ▶ Understand how to measure volume using displacement.
-

Assessments

During this lesson, students will:

- ▶ Name the season apples are ripe in.
 - ▶ Describe the finished apple cider using one of their five senses.
 - ▶ Collectively make a hypothesis on the volume of apples and read the measurement after the displacement activity, in order to find the volume.
-

Materials

FOR THE OPENING CIRCLE

- Visual aid

FOR THE CIDER STATION

- Apple press and bucket with liter measurements to catch cider
- 21 lbs. of apples
- 35 cups
- 2 pitchers
- Trays for serving

Before You Begin

- ☑ Create the visual aid with apple facts.
 - ☑ Collect all the materials.
 - ☑ Create the apple cider station by setting up the press and bucket to catch cider.
 - ☑ Create the apple gallery by purchasing apples that are unique and that showcase varying characteristics (5-6 varieties are needed). Create descriptions of the apples you have for the gallery.
-

Procedures

1

AT THE OPENING CIRCLE

(Use the word **collaborate** in a sentence: “We will collaborate to press cider so that we can all enjoy a sip at the end.”)

1. Welcome students and introduce the day’s activity.
2. Explain that in celebration of fall, students will learn about apples in Opening Circle, press cider, and enjoy cider in Closing Circle.
3. Review visual aid.
4. Ask if anyone has heard of displacement and invite students to share what they know about it. Describe how displacement can be used to measure volume.
5. Ask a student to use the measuring guidelines on the side of the bucket to figure out how much water is in the bucket.
6. Have students guess how high the water will rise once the apples are placed in the bucket.
7. Ask a student to put the apples in the bucket of water, instructing students to watch the level of water as the apples are submerged. Explain that the apples float because they are less dense than the water. Have a student push the apples down so they are completely submerged.
8. After all the apples are in the water, have a student read the measurement on the side of the bucket to figure out how much water was displaced. Remind students that this number indicates the volume of the apples.
9. Review garden jobs and explain that students will rotate through the cider station in their working groups.
10. Divide the class into groups for garden jobs. Rotate each group through the apple cider station during garden work time.

2

AT THE APPLE CIDER STATION

1. Bring students over to the apple cider press station and show them the apple gallery. Remind students that apples come in many varieties and that we usually see a few common varieties for sale in our grocery stores. Give students a chance to read descriptions of the different apples and have them notice the different characteristics among them.
2. Describe how the apple press operates, emphasizing safety, and move students through each job (holding the press, putting apples in, cranking the gears, and catching the cider).
3. After everyone in the first group has had a chance to do each job, return students to their garden job and bring in the next group. Once all the groups have taken a turn grinding apples, invite students from the final group to press the apples to collect the remaining juice. Pour cider into small cups to be served during closing circle.

3

AT THE CLOSING CIRCLE

(Use the word **characteristic** in a sentence: "Now that you've tasted the cider, what are some characteristics of the cider using your five sense?")

1. Welcome students back to the closing circle.
2. Introduce the components of the tasting ritual to students.
 - ▶ Wait until everyone is served.
 - ▶ Once everyone is served, taste.
 - ▶ Make an observation of the tasting based on the five senses.
3. Differentiate an opinion from an observation.
4. Have student volunteers serve cider from trays to classmates.
5. Once everyone has been served and has tasted the cider, ask each student to share their name and an observation.

Vocabulary

- ▶ Variety

☑ Connections to Standards

COMMON CORE ENGLISH LANGUAGE ARTS & LITERACY, GRADE 6

- RI.6.7** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
- RH.6.7** Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

IN THE EDIBLE SCHOOLYARD PROGRAM

- 3.12 Understand seasonality by recognizing and enjoying foods at their peak of flavor and ripeness.

IN THE GARDEN CLASSROOM

Students handle post harvest crops appropriately with guidance

- 2.4 Techniques: Harvest and prepare crops with guidance, recognize the relationship between the kitchen and garden, and learn the seed to table concept.

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.

URLS

Read about this lesson in the ESY Berkeley Journal

<http://edibleschoolyard.org/esy-berkeley-journal/2011/10/04/drink-cider-and-live>

Resources

- Apple_Cider_Visual_Aid.pdf

APPLES...



Flower in the Spring and are ripe in the Fall.



Come in over 7,000 varieties that vary in size, color, and taste.

Belong to the Rose family and are related to plums, peaches, cherries, strawberries, almonds, and raspberries.



Originated in Western Asia



Are significant in many cultures, and are grown all over the world.

Are good for you! they keep your heart and brain healthy!



Welcome Back Lesson

Summary

In this sixth-grade Edible Schoolyard class, students are welcomed back after the winter break to start the new semester. They discuss seasonality in depth and review how the 4B's can be applied in the garden (Be Safe, Be Respectful, Be Responsible, and Be an Ally).

Objectives

After this lesson, students will be able to:

- ▶ Explain the concept of seasonality.
 - ▶ Explain the behavioral expectations in the garden using information on the 4B's poster as a guide.
 - ▶ Demonstrate an emerging understanding of the Edible Schoolyard tools, techniques, and concepts.
-

Assessments

During this lesson, students will:

- ▶ Discuss seasonality and look for it in the garden.
 - ▶ Review the 4B's poster and share real life examples.
 - ▶ Discuss how teamwork, unity, and confidence can be developed in the garden.
-

Materials

- Respect in the Garden Visual Aid
 - Garden tools necessary for jobs
-

Before You Begin

- Create the Respect in the Garden Visual Aid
- Create the Job Board

Procedures

1 AT THE OPENING CIRCLE

1. Welcome students to the Ramada and review the Respect in the Garden poster.
2. Introduce the Job Board.
 - ▶ Usually there are four jobs, or four jobs and one lab, or one to three stations for students to rotate between.
 - ▶ Have each teacher explain further about the job they will be leading.
3. Tell students to note one thing that has changed in the garden to share in Closing Circle and to remember their garden name from the fall semester.
4. Divide the class into four groups for garden jobs.

2 IN THE FIELD

Class is broken into four groups, each with one garden teacher and six to eight students who focus on one job.

1. Check in and review garden job at job site.
2. Have each student answer a “check-in” question.
 - ▶ Ask if they notice anything that has changed in the garden since their last day before winter break.
 - ▶ Remind them to remember their answer, or look for one if they didn’t have one yet, to share in Closing Circle.
3. Break down the steps for the garden job and have students identify necessary tools before going to the toolshed.
4. Work together on your garden job.
5. Give students short breaks for chicken time and foraging.

3 AT THE CLOSING CIRCLE

1. Ask students to identify one thing that has changed in the garden and to share their garden name.

☑ Connections to Academic Standards

COMMON CORE STATE STANDARDS, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 6

SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher- led) with diverse partners on grade 6 topics, texts, and issues, building on others’ ideas and expressing their own clearly.

SL.6.1.b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- SL.6.1.c** Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
- SL.6.1.d** Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
- SL.6.2** Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
- SL.6.4** Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
- SL.6.6** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 for specific expectations.)
- L.6.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
 - L.6.1.a** Ensure that pronouns are in the proper case (subjective, objective, possessive).
 - L.6.1.b** Use all pronouns, including intensive pronouns (e.g., myself, ourselves) correctly.
 - L.6.1.c** Recognize and correct inappropriate shifts in pronoun number and person.
 - L.6.1.d** Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).
- L.6.3** Use knowledge of language and its conventions when writing, speaking, reading, or listening.
 - L.6.3.a** Vary sentence patterns for meaning, reader/ listener interest, and style.
 - L.6.3.b** Maintain consistency in style and tone.
- L.6.6** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Connections to Edible Schoolyard Standards

EDIBLE SCHOOLYARD 3.0 IN THE EDIBLE SCHOOLYARD PROGRAM

- 1.0** Students work with each other and teachers to develop community and personal stewardship, along with skills that will help them navigate different situations throughout their lives.
- 1.1.1 – 1.3.12** This lesson fulfills all Edible Schoolyard Program standards, numbers 1.1.1 through 1.3.12. See The Edible Schoolyard Berkeley Standards for details.

Focusing on:

- 1.3.11** Understand seasonality by recognizing and enjoying foods at their peak of flavor and ripeness. Students know that locally sourced foods are good choices because they provide optimum freshness, support the local economy, and help offset global warming.
-

Contributors

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

Resources

- G6-0_Visual_Aid.pdf (See lesson G6-0)
- BEETLES_Learning_Cycle.pdf (See lesson G6-0)

Flower Discovery

Summary

In this sixth-grade science lesson, students explore and study flowers like scientists do, learn about and practice scientific drawing, label the structures and their function, and discuss their findings, questions, and ideas.

Objectives

After this lesson, students will be able to:

- ▶ Name some of the structures of a flower.
 - ▶ Draw what they see.
 - ▶ Make an inference of the function of flower structures.
-

Assessments

During this lesson, students will:

- ▶ Describe and name some flower structures.
 - ▶ Explore the flowers in the garden during a Flower Hunt, create a scientific drawing, and label the parts of a flower using a key.
-

Materials

- Visual aid of the cross-cutting concept Structure and Functions with definition
- Hand lenses
- Pencils
- Clipboards
- Blank paper
- Biology of a Flower key
- Fresh flowers growing in the garden for drawing
- Student cross-pollinating questions copy for each garden teacher
- Small circle check-in Think-Pair-Share questions copy for each garden teacher

Before You Begin

- ☑ Copy the Flower Discovery key to put with clipboard and blank paper.
 - ☑ Sharpen pencils.
 - ☑ Ensure there are enough flowering plants in the garden.
-

Procedures

1 AT THE OPENING CIRCLE

1. Welcome students and introduce this Flower Discovery lesson as an opportunity for them to learn how flowering plants reproduce by studying real flowers.
2. We will be doing a guided exploration of flowers in the garden, primarily looking at their structures and functions. Does anyone know what structure and function means? Have students share responses and then read out the definition.
3. Divide students into groups.

2 IN THE FIELD

1. Get students excited about exploring by telling them there's cool stuff all around us!
2. Explain that their focus of study will be flowers in the garden.
 - ▶ We're going to explore and study flowers kind of like scientists do.
 - ▶ Ask a student to read out loud the structure and function definition.
 - ▶ Practice the definition using a Think-Pair-Share activity, asking students to come up with an example of a structure and its function with their neighbor (this will be their partner in the activity). Share out examples.
 - ▶ Introduce sketching and recording information as a scientific tool. Explain that looking at structures and how they function is something scientists do.
 - ▶ Introduce techniques that are used in scientific illustrations: draw what you see, detail, labeling, questions, multiple angles.
 - ▶ It's not about making a pretty picture. It's about noticing things accurately and writing them down.
 - ▶ Sometimes a drawing will help show what you noticed; sometimes words will communicate it better. Use both in your study.
3. Tell pairs they are going to go on a Flower Hunt to explore and find as many types of flowers as they can. Explain safety for the flowers, and boundaries. Give out hand lenses.
 - ▶ In pairs, you'll have five minutes to explore this area and observe as many flowers as you can. We will not be harvesting the flowers, but rather focus on their structures.

- ▶ Your goal during exploration time is to be gentle with these plants and to find as many different kinds as possible, so you can choose a favorite.
 - ▶ You can grab a clipboard, pencil, and blank paper either now or in five minutes, after your exploration. You will choose your favorite flower and make a scientific drawing of it, recording as many observations and questions as you can, like a scientist would.
4. Facilitate student exploration; circulate and troubleshoot. After five minutes, inform students it's time to choose their flowers and begin drawing. Each pair chooses one flower to focus on.
 5. Make sure each student has a clipboard, pencil, and blank paper; each student records observations through writing and drawing. Give them about 15 minutes to draw.
 6. Assign each student pair to a different group; one will be "Student A," the other "Student B."
 7. Circulate to each pair to explain how this "swap" time will work. The "A" students stay with their flower to share findings. "B" students will circulate among the "A" students, like a pollinator. The "B's" are to visit at least two flowers.
 8. Let students/scientists know they'll be discussing their discoveries and questions, not just lecturing each other on what they found.
 - ▶ This should be a discussion, not a one-way lecture.
 - ▶ Using the sentence prompts "I noticed," "I wonder," and "It reminds me of," "A's" and "B's" will discuss flowers.
 9. Begin swap convention with "B" students circulating and instructor participating.
 10. After the "B's" have visited two flowers (approx. 10 minutes), ask students to circle up for a share out of their discoveries. Do a Think-Pair-Share—what structures or functions did you notice? Students will be sharing out this information in the Closing Circle, so give them the opportunity to practice using the sentence structure "I noticed, I wonder, It reminds me of."
 11. Provide students with a targeted exploration time in which they apply the structure and function lens to the garden scape, including the chickens! Ask that they be prepared to share their observations in Closing Circle.

3

AT THE CLOSING CIRCLE

1. Share observations from the day.

Vocabulary

- ▶ Petal
- ▶ Pistil
- ▶ Stamen
- ▶ Sepal

Connections to Standards

CALIFORNIA STATE, SCIENCE, GRADE 7

7.5.f Students know the structures and processes by which flowering plants generate pollen, ovules, seeds, and fruit.

EDIBLE SCHOOLYARD 3.0 IN THE GARDEN CLASSROOM, GRADE 7

Concepts 3.7 Use observation and awareness to explore, investigate and be inquisitive learners in the garden. The garden classroom provides the opportunity for students to tap into their inherent curiosity about the natural world, observe patterns and connections and understand cause and effect.

Concepts 3.9: Observe the garden as a habitat for pollinators, understand the impact of pollination on our food supply, develop appropriate responses to them, and consider the multitude of habitats throughout the garden.

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.

URLs

Read about this lesson in the ESY Berkeley Journal

<http://edibleschoolyard.org/esy-berkeley-journal/2010/04/27/biology-flower>

Resources

- Flower Discovery Key
- Student Cross-Pollinating questions
- Small Circle Check-In Pair-N-Share questions

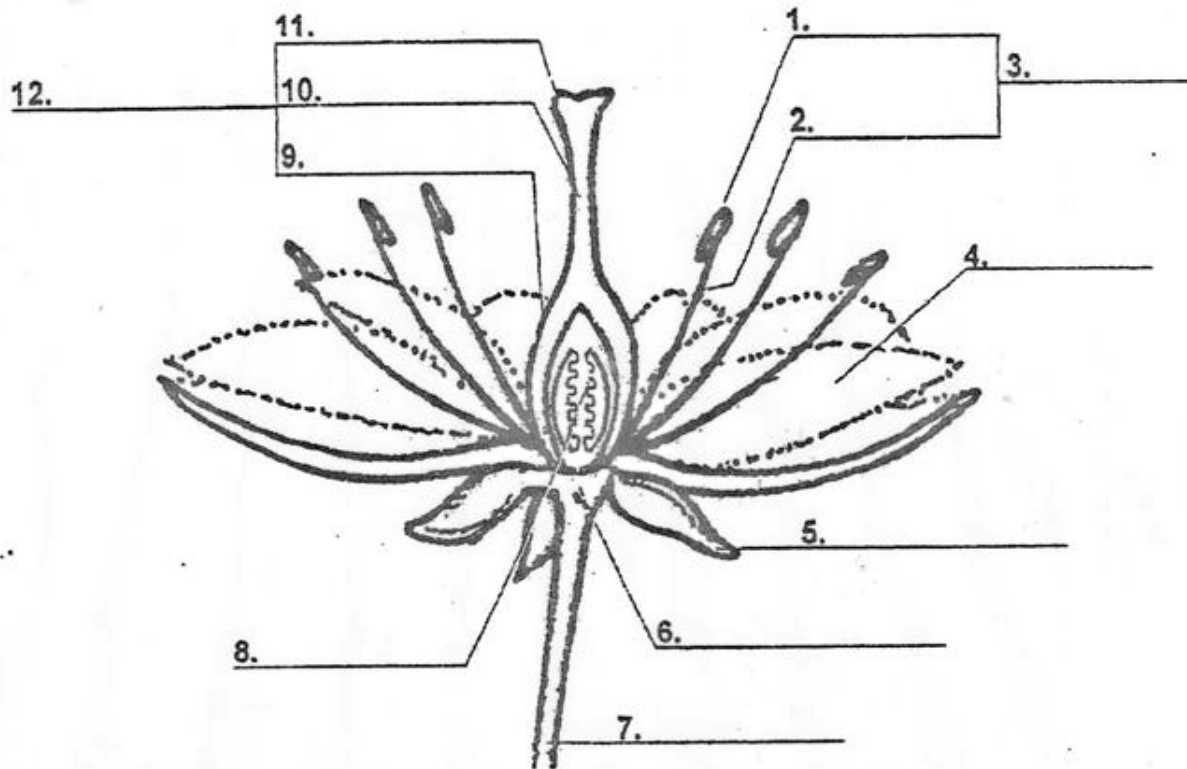
FLOWER ANATOMY SHEET

Using the following words, label the structures (parts) of the flower.

stigma
anther
filament
pedicel

petal
style
receptacle
ovary

ovule
pistil
stamen
sepal



Using the definitions below, label the structures of the flower with the letter matching their function.

- A. Specially colored to attract potential pollinators
- B. thick and waxy modified leaves which act as protection for the developing flower
- C. female organ of a flower
- D. sticky surface at the top of the pistil; it traps and holds pollen
- E. tube-like structure that holds up the stigma
- F. when fertilized becomes a seed
- G. when fertilized becomes the fruit
- H. the pollen-bearing part of the stamen
- I. the stalk that holds the anther
- J. male organ of a flower
- K. part of the stem from where flower organs grow
- L. the stalk bearing a flower

Person with the flower shares their observations, questions, and ideas and asks the visiting person:

- *“Do you think I have all the structures I could draw on my scientific drawing? If not, what more could I add?”*
- *“Did anything about my flower remind you of your flower?”*

Visiting person asks clarifying questions to the person with flowers:

- *“Does your flower have _____?” (name a structure: sepals, petals, stamen, pistil)*
- *“How is it represented in your drawing?”*
- *“What did you notice about this structure? What do you think the function is?”*
- *“What do you wonder about your flower?”*

What do you notice about the flowers in the garden?

What are some plant structures that help them survive here?

Kale Pesto with Lemonade Abstract

Summary

In this sixth-grade lesson, students experience cooking and eating outdoors. Instead of the usual Closing Circle in the Ramada, we enjoy fresh food and good conversation as we eat together at the long table to celebrate the last 6th grade garden class of the year.

Objectives

After this lesson, students will be able to:

- ▶ Read and follow a recipe and understand that some recipes are flexible and some are specific.
 - ▶ Connect the kitchen experience with the garden.
 - ▶ Practice basic knife skills.
-

Assessments

During this lesson, students will:

- ▶ Successfully make Kale Pesto and Lemonade.
 - ▶ Translate kitchen skills into cooking outdoors.
 - ▶ Maintain the same number of fingers as when they started.
-

Materials

- Job Board
- G6-12 Kale Pesto recipe
- G6-12 Lemonade recipe

TOOLS

FOR THE KALE PESTO STATION

- 3 mortars and pestles
- 6 cutting boards
- 8 butter knives
- 6 paring knives
- 3 chefs' knives
- Mini juicer or measuring spoons
- Cheese grater
- Measuring cup
- 3 large bowls
- 3 wooden spoons for mixing
- Towels
- Plates for serving

FOR THE LEMONADE STATION

- 1 pitcher
- 1 zester
- 1 knife
- 1 cutting board
- 2 juicers with two half-sheet pans to catch spill over
- Measuring cup
- 2 towels
- Wooden spoon for stirring
- Paper napkins
- Cups

INGREDIENTS

FOR THE KALE PESTO

- ½ cup almonds
- 2 cloves garlic
- ¼ cup parmesan cheese
- ½ cup olive oil
- 1 tablespoon lemon juice
- Salt to taste
- 5 baguettes
- ½ pound kale or 2 bunches

FOR THE LEMONADE

- 6 cups water
- ½ cup sugar or honey
- Zest of 2 lemons
- Juice of 6 lemons
- 2 cups ice cubes
- Fresh mint for garnish

Before You Begin

- Collect all the materials.
- Set up each station .
- Set table nearby for eating.
- Create the Job Board.
- Copy the Kale Pesto Recipe for multiple students (some might want to take a copy home).
- Copy the Lemonade Recipe for multiple students (some might want to take a copy home).

Procedures

1 AT THE OPENING CIRCLE

Teachers invite students to celebrate their last day in the garden as 6th graders.

1. Welcome students and introduce today as their last class in the garden as 6th graders.
2. Explain that you have designed a delicious way to celebrate and reflect on your time together in garden class over the entire school year.
3. Divide the class into four groups: one Kale Pesto group, one Lemonade group, and two garden job groups.

2 IN THE FIELD

GARDEN WORK ROTATION OR OUTDOOR COOKING

Students choose to either work in the garden or prepare food to eat at Closing Circle.

1. Two groups of students will participate in garden jobs, one group will make Kale Pesto, and the other group will make Lemonade.
2. At each of the cooking stations:
 - ▶ Circle the students around the cooking area.
 - ▶ Explain what they will be making and that they will be serving it to the rest of class at Closing Circle.
 - ▶ Ask for student volunteers to read the recipe out loud.
 - ▶ Allow students to volunteer for the various jobs.
 - ▶ Prepare the dish and have it ready to serve by the end of class.
 - ▶ The Kale Pesto Station will slice the baguettes, spread pesto on each piece, and place them on serving trays for the end of class.
 - ▶ Be sure to leave some slices of bread plain to accommodate everyone's tastes.
 - ▶ The Lemonade Station is also responsible for setting the table with napkins and a cup of lemonade for each student, teacher, and volunteer.

3 AT THE CLOSING CIRCLE

Students celebrate their last garden class as sixth graders as sharing food and conversation at the table.

1. Have the class sit all together at the long table while select students from the Kale Pesto group serve the rest of the class.
2. Each student may choose three pieces of bread to start and the rest (if there is any) is passed out to those who want seconds.
3. Students and staff sit for approximately 10 minutes engaging in conversation, reflecting on their garden experience, and enjoying the delicious food.
4. When the bell rings, have students bus their cup and napkin to a bus tub at the end of the table.

Connections to Academic Standards

COMMON CORE STATE STANDARDS, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 6

- RI.6.7** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
- RST.6.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- RST.6.7** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- SL.6.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
 - SL.6.1.b** Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
 - SL.6.1.c** Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
 - SL.6.1.d** Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
- SL.6.2** Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
- SL.6.4** Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
- SL.6.6** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 on page 53 for specific expectations.)
- L.6.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
 - L.6.1.a** Ensure that pronouns are in the proper case (subjective, objective, possessive).
 - L.6.1.b** Use all pronouns, including intensive pronouns (e.g., myself, ourselves) correctly.
 - L.6.1.c** Recognize and correct inappropriate shifts in pronoun number and person.
 - L.6.1.d** Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).
- L.6.3** Use knowledge of language and its conventions when writing, speaking, reading, or listening.
 - L.6.3.a** Vary sentence patterns for meaning, reader/listener interest, and style.
 - L.6.3.b** Maintain consistency in style and tone.

L.6.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Connections to Edible Schoolyard Standards

EDIBLE SCHOOLYARD 3.0 IN THE EDIBLE SCHOOLYARD PROGRAM

- 1.0** Students work with each other and teachers to develop community and personal stewardship, along with skills that will help them navigate different situations throughout their lives.
- 1.1.1 – 1.3.12** This lesson fulfills all Edible Schoolyard Program standards, numbers 1.1.1 through 1.3.12. See The Edible Schoolyard Berkeley Standards for details.

IN THE KITCHEN CLASSROOM, 6TH GRADE

- Tools 2.1.3** Identify different knives from the ESY Toolbox and demonstrate basic knife skills, safety, and care with guidance.
- Techniques 2.2.6** Read and follow recipes, and understand that some recipes are flexible and some are specific.
- Techniques 2.2.7** Taste finished dishes and discuss their sensory observations using descriptive vocabulary.

IN THE GARDEN CLASSROOM, 6TH GRADE

- Techniques 3.2.4** Harvest and prepare crops with guidance, recognize the relationship between the kitchen and the garden, and learn the seed to table concept.
-

Contributors

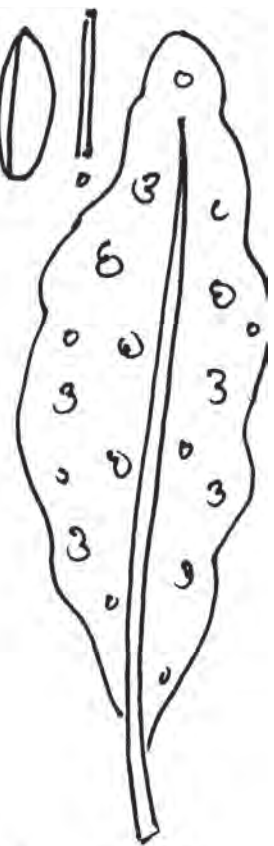
All lessons at the Edible Schoolyard Berkeley are developed in collaboration with the teachers and staff of the Edible Schoolyard and Martin Luther King Jr. Middle School.

Resources

- G6-14_Kale_Pesto_Recipe.pdf
- G6-14_Lemonade_Recipe.pdf

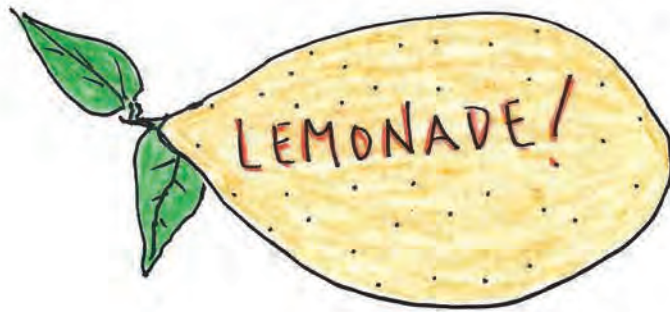
KALE PESTO?? KALE PESTO!

1/2 cup almonds
2 cloves garlic
1/4 cup parmesan
1/2 pound KALE
1/2 cup olive oil
1 tablespoon lemon juice
Salt and pepper



Blanch the kale and set aside. Lightly toast the almonds and roughly chop. In a mortar and pestle, pound the garlic to a paste. Add the almonds and continue to pound. De-stem the kale and tear into pieces. Gradually add the kale to the mortar and pestle and pound until puréed. Transfer the pesto to a small bowl and stir in the olive oil, lemon juice, and parmesan (for a thinner sauce, add more olive oil as needed). Season with salt and pepper to taste.

☆ a blender or food processor can be used in place of a mortar and pestle.



6 CUPS WATER

1/2 CUP SUGAR OR HONEY

ZEST OF 2 LEMONS

JUICE OF 6 LEMONS

2 CUPS ICE CUBES

FRESH MINT FOR GARNISH

POUR WATER INTO A LARGE PITCHER, ADD THE SUGAR OR HONEY AND STIR TILL IT DISSOLVES. ADD LEMON ZEST, LEMON JUICE AND THE ICE CUBES AND MIX WELL. GARNISH WITH FRESH MINT.

OPTION: ADD A DROP OF VANILLA EXTRACT FOR A

History Walk

Summary

In this sixth-grade humanities lesson, students learn about ancient technologies from around the world by rotating through three stations in the garden: grain grinding, roller sledge, and irrigation.

Objective

After this lesson, students will be able to:

- ▶ Relate the ancient technologies in this lesson to modern technologies.
-

Assessment

During this lesson, students will:

- ▶ Give an example of a modern-day technology that originated from one of these ancient technologies.
-

Materials

FOR THE ROLLER SLEDGE STATION

- Roller Sledge cards
- Grain cards
- Wooden palette
- 8 wooden poles (8' long 2" diameter)
- Nylon rope (15' long)
- Gardening gloves

FOR THE GRAIN GRINDING STATION

- Grain cards
- Mortar and pestle
- Wheat stalks
- Bags for threshing
- Raw wheat berries
- Cooked wheat berries for tasting and serving spoon
- Grain grinding bicycle (optional)

FOR THE IRRIGATION STATION

- Trowels
- Elevated sandbox at a slight slant
- Hose and elbow irrigation fitting
- Globe
- Wooden blocks
- Spade hoe and rake (for resetting the table)
- Large bucket (for capturing released water)

Before You Begin

CREATE THE ROLLER SLEDGE STATION

- ☑ Prepare the Roller Sledge cards.
- ☑ Collect all the materials and place them at the station.
- ☑ Tie the rope to the palette securely at two corners so that there is a loop about 4-6 feet long for students to pull the sledge.

CREATE THE GRAIN GRINDING STATION

- ☑ Prepare the Grain cards.
- ☑ Cook wheat berries for tasting.
- ☑ Collect all the materials and arrange them on a table.

CREATE THE IRRIGATION STATION

- ☑ Collect all the materials and place them at the station.
- ☑ Make an elevated sandbox at a slight slant.
- ☑ Connect the hose to the sandbox.

Procedures

1 AT THE OPENING CIRCLE

Use the word “comparable: in a sentence: “What ancient technologies are comparable to modern day technologies?”)

1. Welcome students and introduce this history walk, which is about ancient technologies.
2. Tell students that they will rotate through three stations to learn about different types of ancient technologies from all over the world.
3. Point out each station and make sure students can see the set-up materials, but don't name them or explain what they are.
 - ▶ Investigate connections between ancient and modern technologies and introduce today's stations.
 - ▶ Invite students to share the ancient civilizations they have already learned about in their classroom.
 - ▶ Ask them if they think any of those civilizations will be represented today on the Ancient Technologies Walk, and what they think they will be doing at each one.
 - ▶ Introduce each station and briefly describe what will happen there.
 - ▶ **Roller sledge station:** Students will demonstrate using an ancient tool that makes work more efficient.
 - ▶ **Grain grinding station:** Students will thresh, winnow, and grind wheat or barley.

- ▶ **Irrigation station:** Students will explore the technologies of dams, levees, canals, and reservoirs using an elevated sand tray with a river running through it.
- ▶ Ask students to think about modern-day technologies that may have derived from the ancient technologies they will learn about in the walk.
- ▶ Divide students into three groups and rotate the groups through each station.

2

AT THE ROLLER SLEDGE STATION

1. Ask students when the Egyptians built the pyramids and prompt them to think about how we know information about civilizations that lived four to five thousand years ago.
2. Show students the cards of workers building the pyramids using the roller sledge technique and invite them to share their observations.
3. Share the facts aloud that are on the back of the Roller Sledge Cards:
 - ▶ The Great Pyramid is outside of Cairo.
 - ▶ It was built with 2.3 million stones.
 - ▶ The average stone weighed 2.5 tons or the equivalent of an SUV.
 - ▶ Some stones weighed as much as 16 tons or the equivalent of two full-grown elephants.
 - ▶ The great pyramid is 1½ football fields tall and 2½ football fields wide.
 - ▶ It took 10-20 years to build under the Khufu pharaoh.
4. Explain that today's challenge is to move very heavy "rocks" from one location to another as a team using the roller sledge.
5. Assign students roles: pullers, wooden pole movers, and rocks (a nonspeaking part).
6. Demonstrate how to safely hold the poles and emphasize safety:
 - ▶ Rocks should always be in a sitting position with hands and feet away from the edge.
 - ▶ Polers should always wait until the pole is completely released before reaching for it.
 - ▶ Ask the students to put on gloves and set up the roller sledge by placing half the poles parallel on the ground, roughly two feet apart, and placing the pallet on top.
 - ▶ Ask the rocks to get on board and tell the pullers to pull slow and steady, making sure to give the pole movers enough time to move each pole from the back to the front as the pallet moves forward. Pole movers will have the remaining poles in hand at the ready.
 - ▶ Once they have completed a successful test run, ask students if they're up for the challenge of putting more weight on the pallet and going up hill. When they accept the challenge, take all supplies to the bottom of the hill and begin the process again. Give students the option of switching roles at this time. Remind students that they are moving hundreds of pounds of weight up hill without motors or wheels!

- ▶ Increase the challenge if time permits (up a steeper hill, a longer distance, more weight, fewer pullers).
- ▶ When time is up, send students to the Irrigation Station.

3

AT THE IRRIGATION STATION

1. Using a globe, ask students to find modern-day Mesopotamia and to describe the climate and landscape of the region.
2. Prompt students to think about the challenges of living where there are periods of drought and periods of flooding.
3. Define reservoir, levee, dam, and canal.
4. Compare the landscape in the elevated sandbox to Mesopotamia.
5. Give each student a plot to irrigate in the sandbox.
6. Explain that each student is responsible for creating a system of irrigation that will move water from the main river to their plot using reservoirs, canals, dams, and levees.
7. Tell students they need to allow water to flow to communities downstream.
8. Give each student one trowel and one wooden block.
9. Ask them to imagine that they are ancient Sumerians.
10. Re-create a flood scenario with storytelling and water flowing through the hose into the sandbox.
11. Give the students an opportunity to assess their irrigation system, make improvements and try again.
12. Then ask students to discuss the improvements they made.
13. When time is up, send students to the Grain Grinding Station.

4

AT THE GRAIN GRINDING STATION

1. Ask students what a staple crop is, and ask them to give examples from around the world.
2. Explain that wheat was one of the staple crops in Ancient Egypt.
3. Show students the card with an image of a harvester, and ask them to describe what they see.
 - ▶ Explain that in the image the person is harvesting and threshing grain.
4. Hold up an example of a wheat stalk and ask if students know how wheat turns into bread.
5. Tell students that in this station they will process grains in three different ways.
6. Show students the card with an image of someone using the mortar and pestle, and ask them to describe what they see.

- ▶ Explain that the person in the image is grinding grain.
- 7. Explain that today students will be using the mortar and pestle to grind wheat berries into flour.
- 8. Invite students to taste the cooked wheat berries.
- 9. Ask a student to demonstrate using the mortar and pestle, reminding them to be gentle.
- 10. Ask a student to demonstrate using the bag method to thresh, and how to use your breath to winnow.
- 11. Explain that you will be choosing students two at a time to ride the grain-grinding bicycle.
- 12. Divide students into three groups and have them rotate through all three substations of the Grain Grinding Station.
- 13. When time is up, send students to the Roller Sledge Station.

5

AT THE CLOSING CIRCLE

1. Lead students in a brainstorm of the discussed technologies from the history walk.
2. Ask students to use the Think-Pair-Share process to reflect on today's lesson.
 - ▶ **Think:** Give students an interesting broad question to think or write about briefly.
 - ▶ **Pair:** Pair students, and ask them to discuss the question(s) with their partner.
 - ▶ **Share:** Students share their discussion ideas with another pair of students or the instructor leads a whole group discussion about the topic.
3. Ask students to choose one of the stated technologies, turn to a neighbor, and connect it to a modern-day technology.
4. Invite students to share what they discussed with their partner with the group.

Vocabulary

- ▶ Thresh
- ▶ Winnow
- ▶ Chaff
- ▶ Staple crop
- ▶ Roller sledge
- ▶ Irrigation
- ▶ Reservoir
- ▶ Levee
- ▶ Dam
- ▶ Canal

☑ Connections to Academic Standards

NEXT GENERATION SCIENCE STANDARDS, MIDDLE SCHOOL

SCIENCE AND ENGINEERING PRACTICES:

Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.

Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe nature operate today as they did in the past and will continue to do so in the future. (MS-ESS2-2)

Undertake a design project, engaging in the design cycle, to construct and/or implement a solution that meets specific design criteria and constraints.

Apply scientific ideas or principles to design an object, system, process or tool.

HISTORY–SOCIAL SCIENCE CONTENT STANDARDS FOR CALIFORNIA PUBLIC SCHOOLS, GRADE 6

- 6.2** Students analyze the geographic, political, economic, religious, and social structures of the early civilizations of Mesopotamia, Egypt and Kush.
 - 6.2.1** Locate and describe the major river systems and discuss the physical settings that supported permanent settlement and early civilization
 - 6.2.2** Trace the development of agricultural techniques that permitted the production of economic surplus and the emergence of cities as centers of culture and power.
 - 6.2.5** Discuss the main features of Egyptian art and architecture.

COMMON CORE STATE STANDARDS, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 6

- RH.6.7** Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
- RI.6.7** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
- RST.6.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- RST.6.7** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- SL.6.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher- led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
 - SL.6.1.b** Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- SL.6.1.c** Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
- SL.6.1.d** Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
- SL.6.2** Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
- SL.6.4** Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
- SL.6.5** Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.
- SL.6.6** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 on page 53 for specific expectations.)
- L.6.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
 - L.6.1.a** Ensure that pronouns are in the proper case (subjective, objective, possessive).
 - L.6.1.b** Use all pronouns, including intensive pronouns (e.g., myself, ourselves) correctly.
 - L.6.1.c** Recognize and correct inappropriate shifts in pronoun number and person.
 - L.6.1.d** Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).
- L.6.3** Use knowledge of language and its conventions when writing, speaking, reading, or listening.
 - L.6.3.a** Vary sentence patterns for meaning, reader/ listener interest, and style.
 - L.6.3.b** Maintain consistency in style and tone.
- L.6.6** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Connections to Edible Schoolyard Standards

EDIBLE SCHOOLYARD 3.0 IN THE EDIBLE SCHOOLYARD PROGRAM

- 1.0** Students work with each other and teachers to develop community and personal stewardship, along with skills that will help them navigate different situations throughout their lives.
- 1.1.1 – 1.3.12** This lesson fulfills all Edible Schoolyard Program standards, numbers 1.1.1 through 1.3.12. See The Edible Schoolyard Berkeley Standards for details.

IN THE GARDEN CLASSROOM

Concepts 3.3.7 Use observation and awareness to explore, investigate and be inquisitive learners in the garden. The garden classroom provides the opportunity for students to tap into their inherent curiosity about the natural world, observe patterns and connections and understand cause and effect.

Concepts 3.3.10 Acknowledge water as a precious resource that is intrinsic to all living organisms, explore methods of water conservation, and are encouraged to do the same in their own lives as well.

Contributors

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

Resources

- G6-7_Grain_Cards.pdf
- G6-7_Roller_Sledge_Cards.pdf

Agriculture



One wall of the carpenter Sennedjem's tomb shows him and his wife (in party clothes!) ploughing and reaping in the afterworld, something they had never done in life.

This statuette shows a woman grinding grain into flour using a grindstone on an oval slab. It is from the Pyramid district of Giza, 6th Dynasty, c. 2200 B. C.



similar "mortar and pestle"

Farming in Egypt



Farmers in ancient Egypt learned how to grow wheat and barley. This tomb painting shows a couple harvesting their crop (left). Farmers in Egypt still use the fertile lands along the Nile River to grow food (above).

Sled System

Inside the Great Pyramid, tunnels led to the pharaoh's burial chamber, which was sealed off with rocks.

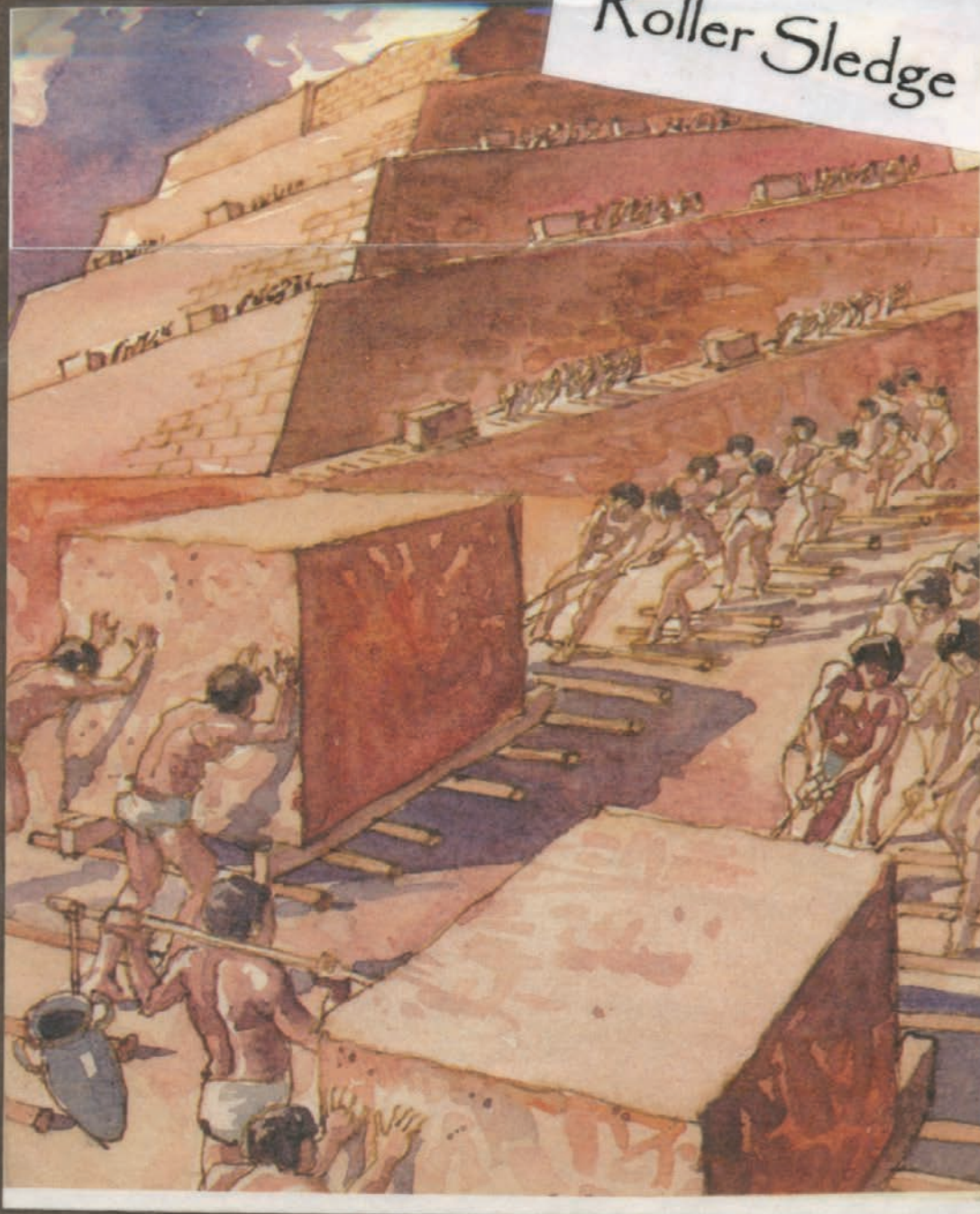
Teams of workers dragged the stones on wooden sleds to the pyramid.

ANALYSIS
SKILL

ANALYZING VISUALS

How did workers get their stone blocks to the pyramids?

Roller Sledge



1. The Great Pyramid is outside of Cairo.
2. It was built with 2.3 million stones.
3. The average stone weighed 2.5 tons or the equivalent of an SUV.
4. Some stones weighed as much as 16 tons or the equivalent of two full grown elephants.
5. The great pyramid is 1 ½ football fields tall and 2 ½ football fields wide.
6. It took 10-20 years to build under the Khufu faro.

Bergen

Track Pitches

The Art of Cultivating : WITH MR. JASON

During this week, we will focus on a variety of garden activities. Our week will start with preparing beds for our upcoming spring/summer plantings. We'll start by cultivating the rainbow beds, amend them with compost and sow a quick cover crop to occupy them for the next 5-6 weeks. We'll also have the opportunity to transplant out a new lettuce patch, including cilantro and radishes. We'll harvest crops for kitchen classes, and lay down wood chips throughout the main pathways. Like all the other groups, we will culminate the week by cooking in the wood fired oven and eating at the picnic table.

Tunnels and Trees : WITH FARMER TANYA

This week, we will be cultivating the perennial beds around the passion fruit tunnel, by removing all the grasses, planting new perennial flowers and herbs, and mulching the beds. These perennial beds often have a tree or two in them, and we can work around, add compost, and plant companion plants to encourage the trees health and growth.

Depending on the garden needs, we may spend a day doing any last minute plant sale upsizing, or watering. We also may care for our strawberry patch. We will plant new strawberry plants in the places where others had died, edging and trimming the beds, adding compost, and mulching the plants to boost their vitality. Like all the other groups, we will culminate the week by cooking in the wood fired oven and eating at the picnic table.

Good Fences Make Good Neighbors : WITH ELI

In this track we will be cleaning up around our fences. We will start with the espalier apple fence line; weeding, composting, and mulching around each tree and repairing any broken or damaged supports on the fence line. We will also cut back the ivy growing behind the espalier apple fence. We will then move onto eradicating the booming field of fennel near the fence by the outdoor oven. Our week will end with the removal of two trees growing near the fence line in the back 40.

Cohen

Track Pitches

Broccoli For The People : WITH MR. JASON

During this week, students will focus on gardening activities. Our week will start with an overview that will help set goals and will include fun team-building and trust games. With a strong cohort of students, we will work together to complete various garden tasks that are needed before the long winter break. Some of the garden tasks that need to happen are transplanting broccoli in garden beds, harvesting for the kitchen needs, laying down straw and woodchip mulch, and other tasks TBD. For the food activity, our group will be responsible for making the snack for the entire class. We will take the time to harvest ingredients from the garden and make hot tea and popcorn, so we can all sit together and celebrate on the final day!

Plant-a-palooza : WITH FARMER TANYA

We are going to get an early start to propagating for the annual ESY Plant Sale. We will be scouting our winter garden and digging up some of the plants to make divisions of Irises, Mints, Lemon Balm, Yarrow, and Comfrey to name a few. We will also learn to make our own potting soil blend. We will plant seeds in seed trays and take cuttings from many of our perennials, including lots of types of sage, and even fruit trees. If you like to keep relatively clean and chill with the plants by the Greenhouse then this job is for you.

Garden Tree Care : WITH MR. GEOFF

If you like climbing trees with sharp tools then this is the job for you. In this track we will be pruning the trees of the garden and providing them with general care. There are many ways to train and prune fruiting trees, and no single method is right for all situations. In this group you will learn different pruning techniques and find your inner creative self through sculpting the natural world. Brace yourself for a lot of work and some good 'ol fashion fun.

Cohen

Track Pitches

The Art of Cultivating : WITH MR. JASON

During this week, we will focus on a variety of garden activities. Our week will start with preparing beds for our upcoming spring/summer plantings. We'll start by cultivating the rainbow beds, amend them with compost and sow a quick cover crop to occupy them for the next 5-6 weeks. We'll also have the opportunity to transplant out a new lettuce patch, including cilantro and radishes. We'll harvest crops for kitchen classes, and lay down wood chips throughout the main pathways. Like all the other groups, we will culminate the week by cooking in the wood fired oven and eating at the picnic table.

Tunnels and Trees : WITH FARMER TANYA

This week, we will be cultivating the perennial beds around the passion fruit tunnel, by removing all the grasses, planting new perennial flowers and herbs, and mulching the beds. These perennial beds often have a tree or two in them, and we can work around, add compost, and plant companion plants to encourage the trees health and growth.

Depending on the garden needs, we may spend a day doing any last minute plant sale upsizing, or watering. We also may care for our strawberry patch. We will plant new strawberry plants in the places where others had died, edging and trimming the beds, adding compost, and mulching the plants to boost their vitality. Like all the other groups, we will culminate the week by cooking in the wood fired oven and eating at the picnic table.

Good Fences Make Good Neighbors : WITH ELI

In this track we will be cleaning up around our fences. We will start with the espalier apple fence line; weeding, composting, and mulching around each tree and repairing any broken or damaged supports on the fence line. We will also cut back the ivy growing behind the espalier apple fence. We will then move onto eradicating the booming field of fennel near the fence by the outdoor oven. Our week will end with the removal of two trees growing near the fence line in the back 40.

Schoenfeldt

Track Pitches

Sweet Pea Patch : WITH MR. JASON

During this week, we will focus on a variety of garden activities. Our week will start with preparing our sweet pea patch for the spring garden. Our hope is to have the sweet pea patch blooming for the annual Edible Schoolyard Plant Sale! We will work together to lightly cultivate the gardens beds, transplant the sweet peas, and take down the perimeter fence that encloses these beds. We may also have the opportunity to plant the first of our Dahlia tubers, take down old cover crop beds, and lay down straw and woodchip mulch. For the food activity, every group, including ours will have the opportunity to use the wood fire oven on the last day, harvesting crops from the garden in order to cook and eat together at the picnic table.

For the Love of Strawberries : WITH FARMER TANYA

We will start this week by planting all our sunflowers for the Plant Sale into 6-packs. Then we will be revamping and caring for our strawberry patch. We will plant new strawberry plants in the places where others had died, edging and trimming the beds, adding compost, and mulching the plants to boost their vitality. We may also transplant some of the perennial flowers that are growing nearby to a better spot for them, all for the love of strawberries. Like all the other groups, we will culminate the week by cooking in the wood fired oven and eating at the picnic table.

Franken-Tree Care : WITH ELI

Calling all mad scientists, poets, and radical thinkers! Frankenstein's creation was great, but have you ever heard of a Franken-Tree? In this track we will be piecing together bits and pieces of fruit trees to make our own edible creature, in a process known as grafting. We will also have an opportunity to take care of some of the already living Franken-tree's throughout the garden by pruning, weeding, and feeding them yummy compost. If you like creating new things and helping give shape and form to the world around you then this is the track for you.

Name: _____ Teacher: _____ Period: _____

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

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

Franken-Tree Care **1st** **2nd** **3rd**
(with Eli)

Sweet Pea Patch **1st** **2nd** **3rd**
(with Mr. Jason)

For the Love of Strawberries **1st** **2nd** **3rd**
(with Ms. Tanya)

Thank you!

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

Thank you!

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

Name: _____ Teacher: _____ Period: _____

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

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

Franken-Tree Care **1st** **2nd** **3rd**
(with Eli)

Sweet Pea Patch **1st** **2nd** **3rd**
(with Mr. Jason)

For the Love of Strawberries **1st** **2nd** **3rd**
(with Ms. Tanya)

Thank you!

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

Thank you!

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

Name: _____ Teacher: _____ Period: _____

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

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

Franken-Tree Care **1st** **2nd** **3rd**
(with Eli)

Sweet Pea Patch **1st** **2nd** **3rd**
(with Mr. Jason)

For the Love of Strawberries **1st** **2nd** **3rd**
(with Ms. Tanya)

Thank you!

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

Name: _____ Teacher: _____ Period: _____

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

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

Franken-Tree Care **1st** **2nd** **3rd**
(with Eli)

Sweet Pea Patch **1st** **2nd** **3rd**
(with Mr. Jason)

For the Love of Strawberries **1st** **2nd** **3rd**
(with Ms. Tanya)

Thank you!

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

Respect in the Garden

Review Abstract

Summary

In this eighth-grade garden class, students review how the 4B's can be applied in the garden (Be Safe, Be Respectful, Be Responsible, and Be an Ally) and break into groups to work in the garden on different tasks. The time students spend working in the garden functions as hands-on learning to reinforce concepts they've studied in the kitchen, garden, and traditional classrooms.

Objectives

After this lesson, students will be able to:

- ▶ Explain the behavioral expectations in the garden using information on the 4B's poster as a guide.
 - ▶ Demonstrate an increased ability to work independently using the Edible Schoolyard tools, techniques, and concepts.
 - ▶ Explain the concepts of compost, harvest, cultivation, and propagation.
 - ▶ Discuss in detail events and phenomena that regularly occur in the garden ecosystem.
-

Assessments

During this lesson, students will:

- ▶ Review the behavioral expectations in the garden using the 4B's poster.
 - ▶ Discuss how teamwork, unity, and confidence can be developed in the garden.
 - ▶ Partake in garden work that focuses on compost, harvest, cultivation, or propagation.
 - ▶ Use observation and awareness to explore, investigate and be inquisitive learners in the garden.
-

Materials

- Garden tools necessary for jobs
- Respect in the Garden Visual Aid

Before You Begin

- ☑ Create the Job Board
-

Procedures

1 AT THE OPENING CIRCLE

1. Welcome students to the Ramada and introduce the Job Board.
 - ▶ Usually there are four jobs, or four jobs and one lab, or one to three stations for students to rotate between.
2. Have each teacher explain further about the job they will be leading.
3. Introduce the Closing Circle activity so that students are prepared upon returning to circle.
4. Review the Respect in the Garden poster with students.
5. Divide the class into four groups for garden jobs.

2 IN THE FIELD

GARDEN WORK ROTATION

Class is broken into four groups, each with one garden teacher and six to eight students who focus on one job.

1. Check in and review garden job at job site.
2. Have each student answer a check-in question.
 - ▶ Check-in questions should be provocative and fun and may not have anything to do with gardening.
 - ▶ These questions can relate to the lesson or theme of the day.
3. Break down the steps for the garden job and have students identify necessary tools before going to the toolshed.
4. Work together on your garden job.
5. Give students short breaks for chicken time and foraging.

3 AT THE CLOSING CIRCLE

1. Lead a fun activity that helps sum up the class. Games and tastings are popular.
 - ▶ For a tasting:
 - ▶ Have a group of students prepare the tasting during their Garden Work Rotation.
 - ▶ Servers pass a tray with the tasting around the Ramada at Closing Circle.
 - ▶ Students each take one piece, and must wait until everyone has been served to taste.
 - ▶ Encourage them to use their other senses to investigate the food until then.

- ▶ After tasting, each student shares their name and, in the eighth grade, draw on their five senses to create a simile about the tasting.

Example: My name is _____ and my apple was sweet like honey.

Vocabulary

- ▶ Job Board
- ▶ Opening Circle
- ▶ Ramada
- ▶ Closing Circle

☑ Connections to Academic Standards

COMMON CORE STATE STANDARDS, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 8

- RST.6-8.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- SL.8.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher- led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- SL.8.1.b** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.8.1.c** Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
- SL.8.1.d** Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.
- SL.8.2** Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.
- SL.8.4** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
- SL.8.6** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
- L.8.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- L.7.1.b** Form and use verbs in the active and passive voice.
- L.7.1.c** Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood.
- L.7.1.d** Recognize and correct inappropriate shifts in verb voice and mood.*

- L.8.3** Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- L.7.3.a** Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).
- L.8.6** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
-

Connections to Edible Schoolyard Standards

EDIBLE SCHOOLYARD 3.0 IN THE EDIBLE SCHOOLYARD PROGRAM

- 1.0** Students work with each other and teachers to develop community and personal stewardship, along with skills that will help them navigate different situations throughout their lives.
- 1.1.1 – 1.3.12** This lesson fulfills all Edible Schoolyard Program standards, numbers 1.1.1 through 1.3.12. See The Edible Schoolyard Berkeley Standards for details.

IN THE GARDEN CLASSROOM, 8TH GRADE

- Tools 3.1.1** Identify, choose, use, and care for a wide variety of tools and equipment independently.
- Tools 3.1.2** Select, use, and care for scientific measuring tools in the garden, measure precisely and understand what results mean.
- Techniques 3.2.3** Build, tend, and sift a compost pile from start to finish independently, explain how fungus, bacteria and invertebrates are part of decomposition; identify that decomposition is occurring all around us all the time.
- Techniques 3.2.4** Harvest and prepare crops independently; explain the seed to table concept, recognize ripeness and seasonality, and identify crops ready for harvest.
- Techniques 3.2.5** Explain the purpose of soil cultivation, cultivate a bed independently from start to finish; explain the purpose and function of crop rotation.
- Techniques 3.2.6** Sow seeds and transplant seedlings independently; graft plants and propagate cuttings more independently; make soil mixes for sowing seeds and upsizing plants; explain why the greenhouse provides an optimal environment for plant propagation.
- Concepts 3.3.7** Use observation and awareness to explore, investigate and be inquisitive learners in the garden. The garden classroom provides the opportunity for students to tap into their inherent curiosity about the natural world, observe patterns and connections and understand cause and effect.
- Concepts 3.3.8** Understand that soil is the lifeblood and fertility of the garden: it is alive, diverse, and deserving of our care in cultivation and preservation.

Concepts 3.3.9 Recognize the garden as a habitat for pollinators, understand the impact of pollination on our food supply, develop appropriate responses to them, and consider the multitude of habitats throughout the garden.

Concepts 3.3.10 Acknowledge water as a precious resource that is intrinsic to all living organisms, explore methods of water conservation, and are encouraged to do the same in their own lives as well.

Contributors

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

Resources

- G6-0_RIG_Visual_Aid.pdf
- BEETLES_Learning_Cycle.pdf

Garden Lesson G8-1

RIG Review

Academics

This lesson fulfills Common Core State Standards for following a multistep procedure; collaborative discussion; analyzing the purpose of information; speaking and listening; and language.

Communication

Students divide up into teacher-led groups to get work done.

Sustainability

Rituals and routines of the garden set the stage for learning in nature, where students observe natural processes occurring in the garden ecosystem firsthand.

Nourishment

Students sample forage crops and have a seasonal fruit, vegetable or herb tasting in Closing Circle.

Life Skills

Students focus on listening and following directions, participate in class routines and learn what it takes to grow food.



Soil pH Lab Abstract

Summary

In this eighth-grade science lesson, students test the pH levels of soil from three different sites in the garden to determine the level of acidity in the garden soil.

Objectives

After this lesson, students will be able to:

- ▶ Use scientific tools to determine whether the soil is acidic, basic, or neutral.
-

Assessments

During this lesson, students will:

- ▶ Accurately test and record the pH of the soil using a pH strip and probe.
-

Materials

- | | |
|---|--|
| <input checked="" type="checkbox"/> G8-2 Visual Aid | <input checked="" type="checkbox"/> Signs for sample areas |
| <input checked="" type="checkbox"/> Watering cans | <input checked="" type="checkbox"/> Clipboards |
| <input checked="" type="checkbox"/> Sticks for stirring | <input checked="" type="checkbox"/> Pencils |
| <input checked="" type="checkbox"/> pH strips | <input checked="" type="checkbox"/> Soil pH Lab worksheets |
| <input checked="" type="checkbox"/> pH color key | <input checked="" type="checkbox"/> Calculator |
-

Before You Begin

- Create the Visual Aid.
- Copy the Soil pH Lab worksheet to hand out.
- Label the sites and dig holes where samples will be collected.
- Collect all the materials, then set them up to make a pH lab.

Procedures

1

AT THE OPENING CIRCLE

1. Welcome students and introduce the Soil pH Lab.
2. Ask students to explain what pH measures.
3. Explain that pH is relevant to the garden because it indicates nutrient availability.
 - ▶ Tell them that the ideal acidity level for soil is between 6 and 7.
4. Explain that microorganisms, like bacteria, are most prevalent in slightly acidic soil (6-7) and that microorganisms are responsible for making nutrients available to plants.
5. Explain that students will use pH strips to test the pH of three different areas in the garden:
 - ▶ An annual bed
 - ▶ A perennial bed
 - ▶ A compost pile
6. Prompt students to think about scientific procedures and why it is necessary to test three different areas of the garden.
7. Ask students to predict which site will be in the ideal 6-7 window on the pH scale and why.
8. Divide students into four working groups for garden jobs, and lead one of the groups to the pH lab for the first rotation.

2

IN THE FIELD

GARDEN WORK ROTATION

Students think about and discuss scientific procedures, pH, and soil health while they work in the garden.

1. Each group rotates through the pH Lab as the other groups work in the garden.
2. The first group jumps to “At the pH lab” while the other three groups begin their garden work.
3. When the first group is done with the pH lab, they return to (or begin) their Garden Work Rotation and the next group starts the pH Lab.
4. It takes a total of 80 minutes of class time to get all groups through steps 2 and 3.

3

AT THE pH LAB

1. Gather students around the pH lab table, and divide the group into three smaller groups.
 - ▶ Each group should have:
 - ▶ Watering can
 - ▶ Stir stick
 - ▶ Clipboard with a worksheet
 - ▶ pH strips with the color code key
 - ▶ Pencil
2. Each group of 2-3 students will test a sample from the site.
3. Bring students to their test site and demonstrate how to make a soil solution, dip the pH strip, and how to read the key.
4. Have each group take a reading from the strip, record their data on the worksheet and return to the station to derive a mean average.
5. Ask students to identify their samples as acidic or basic.
6. Ask students what abiotic factors might alter the pH of the soil (rain, sun, temperature).
7. Prompt students to think about methods that can be used for maintaining the soil pH between 6 and 7 (compost, amendments like lime stone and sulfur).
8. Have students reset the pH lab for the next group and return to garden work.

4

AT THE CLOSING CIRCLE

1. Using the whiteboard at the front of the Ramada, collect data from each group.
2. Ask students what they notice about the pH of each site and prompt them to think about methods that can be used for maintaining the soil pH between 6 and 7 (compost, amendments like lime stone and sulfur).
3. Have students serve a seasonal fruit, vegetable, or herb tasting.

Vocabulary

- ▶ pH
- ▶ Basic or alkaline
- ▶ Acidic
- ▶ Neutral
- ▶ Microorganisms

☑ Connections to Academic Standards

NEXT GENERATION SCIENCE STANDARDS, MIDDLE SCHOOL

SCIENCE AND ENGINEERING PRACTICES:

Planning and Carrying Out Investigations

Planning and carrying out investigations in 6-8 builds on K-5 experiences and progresses to include investigations that use multiple variables and provide evidence to support explanations or solutions.

Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.

COMMON CORE STATE STANDARDS, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 8

- RST.6-8.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- RST.6-8.7** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- SL.8.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- SL.8.1.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.8.1.b** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.8.1.b** Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
- SL.8.1.c** Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.
- SL.8.4** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
- SL.8.6** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 8 Language standards 1 and 3 on page 53 for specific expectations.)
- L.8.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- L.8.1.d** Recognize and correct inappropriate shifts in verb voice and mood.
- L.8.3** Use knowledge of language and its conventions when writing, speaking, reading, or listening.

L.8.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Connections to Edible Schoolyard Standards

EDIBLE SCHOOLYARD 3.0 IN THE EDIBLE SCHOOLYARD PROGRAM

1.0 Students work with each other and teachers to develop community and personal stewardship, along with skills that will help them navigate different situations throughout their lives.

1.1.1 – 1.3.12 This lesson fulfills all Edible Schoolyard Program standards, numbers 1.1.1 through 1.3.12. See The Edible Schoolyard Berkeley Standards for details.




IN THE GARDEN CLASSROOM, 8TH GRADE

Tools 3.1.2 Select, use, and care for scientific measuring tools in the garden, measure precisely and understand what results mean.

Contributors

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

Resources

-  G8-2_Visual_Aid.pdf
-  G8-2_Soil_pH_Worksheet.pdf
-  BEETLES_Learning_Cycle.pdf (See lesson G6-0)

Soil pH



Communication

Students work together in small teams to collect and analyze data and make suggestions for raising or decreasing soil pH in areas of the garden, if necessary.

Sustainability

Microorganisms and soil pH are interconnected, an ideal pH will help provide nutrients like nitrogen or carbon to plants in an ecosystem, and testing is a best practice for farmers and gardeners as the pH of the soil fluctuates depending on season and abiotic factors.

Nourishment

Microorganisms are responsible for making nutrients available to plants, and a slightly acidic pH level (between 6-7), is ideal so that the plants provide humans with the best possible nutrition when we eat them.

Life Skills

Students work together in small teams to complete research, focus on listening, speaking and following directions and participate in class routines.

Academics

This lesson fulfills Next Generation Science Standards for planning and carrying out investigations; Common Core State Standards for following multistep procedures; integrating quantitative or technical information; collaborative discussion; speaking and listening; language; and acquiring words and phrases.



CHNOPS Abstract

Summary

In this eighth-grade science lesson, students review the six essential elements of life and discuss how they function in the garden.

Objectives

After this lesson, students will be able to:

- ▶ Name the six essential elements of life.
 - ▶ Describe the role of bacteria in converting nonusable forms of the six essential elements into usable forms.
 - ▶ Give examples of how the six essential elements are obtained by plants in the garden.
-

Assessments

During this lesson, students will:

- ▶ List carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur as the six elements of life.
 - ▶ Discuss the role of bacteria in converting non-usable forms of the six essential elements into usable forms.
 - ▶ Connect the essential elements to processes in the garden while playing a game called The Wind Blows.
-

Materials

- ☑ Compost Cake Visual Aid with Velcro-backed ingredient cards, elements, and file folder
- ☑ Nitrogen Cycle Visual Aid
- ☑ Example cover crop plant (legume) with nitrogen nodes on roots
- ☑ The Wind Blows game cards
- ☑ The Wind Blows element and bacteria signs

Before You Begin

- ☑ Create the Compost Cake Visual Aid.
 - ☑ Create the Nitrogen Cycle Visual Aid.
 - ☑ Pull out an example of a cover crop with nitrogen nodes on roots.
 - ☑ Create The Wind Blows game cards.
 - ☑ Create The Wind Blows element and bacteria signs.
-

Procedures

1 AT THE OPENING CIRCLE

1. Welcome students and explain that we will be talking about CHNOPS in Opening Circle before working in the garden today.
2. Introduce the six essential elements of life and the acronym CHNOPS.
3. Explain that all living organisms need the essential elements of life to live.
4. Prompt students to think about how, as humans, we get the six essential elements of life.
 - ▶ Begin with oxygen and hydrogen and explain that we rely on bacteria to convert the remaining four into usable forms.
5. Show students the compost cake, highlighting the six essential elements in each layer of the compost pile.
 - ▶ Explain that within the FBI, the bacteria are primarily responsible for breaking down and converting the elements into a usable form that plants can uptake through their roots.
6. Show the cover crop and explain that it is an example of bacteria “fixing” nitrogen.
 - ▶ Refer to the nitrogen cycle poster and further clarify the process.
7. Explain that when plants are able to uptake the essential elements of life, we are then able to intake those elements when we eat plants.
8. Repeat the CHNOPS acronym, and call for choral responses after saying each letter.
9. Tell students that in Closing Circle they will play The Wind Blows game, identifying the six essential elements of life and the role of bacteria.
10. Divide the class into four groups for garden jobs.
11. Encourage students to observe examples of the six essential elements during their time in the garden.

2 IN THE FIELD

GARDEN WORK ROTATION

1. Students think about and look for examples of the six essential elements while they work in the garden.

3 AT THE CLOSING CIRCLE

1. Play The Wind Blows, a game similar to musical chairs:
 - ▶ To start the game a teacher reads a statement.
 - ▶ All students for whom the statement is true stand up and change seats.
 - ▶ The last student standing without a seat reads a follow-up to the statement and then reads the next statement. In this particular instance of the game, the statements are about the six essential elements of life.

Vocabulary

- ▶ Carbon
- ▶ Hydrogen
- ▶ Nitrogen
- ▶ Oxygen
- ▶ Potassium
- ▶ Sulfur
- ▶ Bacterium
- ▶ Cover crop
- ▶ Nitrogen fixation

☑ Connections to Academic Standards

NEXT GENERATION SCIENCE STANDARDS, MIDDLE SCHOOL

Disciplinary Core Ideas:

LS1.C: Organization for Matter and Energy Flow in Organisms

Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy.

PERFORMANCE EXPECTATIONS:

MS-LS1-7: Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. [Clarification Statement: Emphasis is on describing that molecules are broken apart and put back together and that in this process, energy is released.] [Assessment Boundary: Assessment does not include details of the chemical reactions for photosynthesis or respiration.]

COMMON CORE STATE STANDARDS, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 8

- SL.8.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher- led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- SL.8.1.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.8.1.b** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.8.1.b** Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
- SL.8.1.c** Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.
- SL.8.4** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
- SL.8.6** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 8 Language standards 1 and 3 on page 53 for specific expectations.)
- L.8.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- L.8.1.d** Recognize and correct inappropriate shifts in verb voice and mood.
- L.8.3** Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- L.8.6** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
- RST.6-8.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- RST.6-8.7** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

Connections to Edible Schoolyard Standards

EDIBLE SCHOOLYARD 3.0 IN THE EDIBLE SCHOOLYARD PROGRAM

- 1.0** Students work with each other and teachers to develop community and personal stewardship, along with skills that will help them navigate different situations throughout their lives.

1.1.1 – 1.3.12 This lesson fulfills all Edible Schoolyard Program standards, numbers 1.1.1 through 1.3.12. See The Edible Schoolyard Berkeley Standards for details.

IN THE GARDEN CLASSROOM, 8TH GRADE

Tools 3.1.2 Select, use, and care for scientific measuring tools in the garden, measure precisely and understand what results mean.

Contributors

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

Resources

- G8-3_Compost_Cake_Visual_Aid.pdf
- G8-3_Nitrogen_Cycle_Visual_Aid.pdf
- BEETLES_Learning_Cycle.pdf (See lesson G6-0)



CHNOPS

Communication

Students identify the 6 essential elements (CHNOPS), shouting them out in order and playing a game that involves reading, listening and following instructions.

Academics

This lesson fulfills Next Generation Science Standards for matter and energy flow in organisms; Common Core State Standards for collaborative discussion; speaking and listening, language; following multistep procedures; and integrating quantitative or technical information.

Sustainability

Cover crops are not only grown to occupy garden beds between plantings and slow down erosion, but also to fix nitrogen into the soil. Any plant in the legume family will fix nitrogen. A cover crop is chopped down after a few months and incorporated into a new compost pile where the FBI breaks it down. During this process of decomposition, essential elements will be converted and made available.

Nourishment

Bacteria have a symbiotic relationship with nitrogen fixing plants like beans and peas, and are responsible for converting elements into usable forms that plants can take in. Some of the six essential elements are easily absorbed in our bodies, like oxygen and hydrogen, however the other elements are usually found in non-usable forms, which we can absorb only by eating plants

Life Skills

Students focus on listening, speaking and following directions and participate in class routines.



Spring Intensive Abstract

Summary

In this eighth-grade garden intensive, students come to garden class every day for a week and focus on a specific track that they choose from a set of four: Three Sisters, Millet for the People, Plant-a-Palooza, or Sign Waves.

Objectives

After this week of lessons, students will be able to:

- ▶ Prepare a meal using crops harvested from a garden.
 - ▶ Work successfully as a team and be comfortable getting to know teammates.
 - ▶ Know tools, techniques, and concepts necessary for growing food, herbs, and flowers.
-

Assessments

During this week of lessons, students will:

- ▶ Work together to prepare a class meal on the last day of Spring Intensive.
 - ▶ Be part of a team for the whole week.
 - ▶ Care for the Edible Schoolyard Garden.
-

Materials

- G8-SI Track Descriptions
 - G8-SI Ballots
 - Materials needed for each track
-

Before You Begin

- Create the Spring Intensive track descriptions (each track is led by a particular teacher).
- Create the Spring Intensive ballots.
- Copy the track descriptions and ballots for all eighth-grade students.
- Plan itineraries for each track (this can be done by the leader of each track).
- Collect all the materials needed for each track.
- Distribute materials to Track Stations.

Procedures

1

AT THE OPENING CIRCLE

1. Welcome students and ask a check-in question.
2. Break into groups and send students to their track stations.

2

IN THE FIELD

AT THE TRACK STATIONS

Each group leader spends the first part of class covering material necessary for the day's work or investigation.

1. Build a Nest With Ms. Rachel
 - ▶ Years ago, there was a giant bird's nest in the garden where you could sit with your friends and enjoy the view of the Golden Gate Bridge. In honor of the Edible Schoolyard's 20th anniversary, we're going to bring back this much-loved structure. We'll be working together to collect natural building materials and weave sticks together to build a giant bird's nest!
2. Flower Power With Farmer Tanya
 - ▶ We will be beautifying the entrance to the Edible Schoolyard, from the Kitchen along the path to the gate that leads to the Outdoor Kitchen. This area is known as our Herb Garden. We will select from culinary, tea, and medicinal plants, as well as a variety of flowers that will complement the area. We will start by weeding or clearing out any plants we don't want, plant the ones we do want, then mulch the areas between the plants so they both stand out as well as conserve water. Learning this whole cycle is similar to learning landscaping. We may also do some greenhouse work, as needed.
3. Pole Bean Madness With Mr. Jason
 - ▶ We will cultivate for the dried pole bean patch, using forks, shovels, and pick axes. Students will use saws to cut bamboo in lengths for the beans to climb up and sow the bean seeds in ground. Students will also spend a day harvesting and preparing the tasting for closing circle on the last day.
4. Table Construction With Mr. Geoff
 - ▶ Our team will be responsible for building new tables and workbenches for the greenhouse plant propagation area in the garden. Jobs will include measuring, cutting, and hammering together the tables. We will be using the age-old guideline of measure twice cut once. Leave a legacy here at King. Build a table.

3

AT THE CLOSING CIRCLE

1. Every day, all the groups get together in the Ramada to share highlights of their work in the garden.
2. Some days there is a tasting, a game, or some other special activity.

Contributors

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

Edible Schoolyard Kitchen Floor Plan



Kitchen Program - Systems and Planning
 Take Home 1 of 3
 Intensive 2016

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

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 busses 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?).

ROTATION 1 - FALL					
LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K6 - 1 (85-90 Min)	Kitchen Orientation & Food Memories with a garden snack	Meet staff, learn routines and systems	<ul style="list-style-type: none"> ▶ Peppers ▶ Cucumbers ▶ Apples ▶ Carrots ▶ Turnips ▶ Pineapple Guavas 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 6:</p> <p>Tools 1.1 Identify basic tools at the ESY Cooking Station and use and care for them with guidance.</p> <p>Tools 1.2 Identify measuring and follow instructions to use and care for them.</p> <p>Tools 1.3 Identify different knives from the ESY Toolbox and demonstrate basic knife skills, safety, and care.</p>	<p>Common Core: ELA and Literacy: LS.6.4. Determine or clarify the meaning of unknown and multiple-meaning words.</p> <p>LS.6.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>
K6 - 2 (85-90 Min)	Greens over Grains	Knife safety and skills, connect the kitchen to the garden	<ul style="list-style-type: none"> ▶ Swiss Chard ▶ Kale ▶ Bok Choy ▶ Collards ▶ Garlic ▶ Amaranth ▶ Millet ▶ Quinoa 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 6:</p> <p>Tools 1.3: Identify different knives from the ESY Toolbox and demonstrate basic knife skills, safety, and care with guidance.</p> <p>Techniques 2.4: Identify ingredients by name and discuss them using descriptive words in conversation</p> <p>Techniques 2.5: Use basic techniques as instructed, and refer to them by name in conversation</p>	<p>Common Core: ELA and Literacy: RST.6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K6 – 3 (85-90 Min)	Pan de los Muertos	Complete a precise recipe, measure accurately, reflect on and share emotional connections to food	<ul style="list-style-type: none"> ▶ Amaranth ▶ Eggs 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 6:</p> <p>Tools 1.2 Identify measuring tools from the ESY Toolbox and follow instructions to use and care for them.</p> <p>Techniques 2.5 Use basic techniques as instructed, and refer to them by name in conversation.</p>	<p>Common Core:</p> <p>ELA and Literacy:</p> <p>RI.6.7. Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p> <p>RST.6.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p> <p>RH.6.4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.</p>
K6 – 4 (85-90 Min)	Autumn Harvest Soup	Vegetable Stock & Soup, complete a flexible recipe	<ul style="list-style-type: none"> ▶ Potatoes ▶ Greens ▶ Celery ▶ Winter Squash ▶ Onions ▶ Garlic ▶ Broccoli ▶ Herbs 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 6:</p> <p>Tools 1.3 Identify different knives from the ESY Toolbox and demonstrate basic knife skills, safety, and care.</p> <p>Techniques 2.6 Read and follow recipes, and understand that some recipes are flexible and some are specific.</p> <p>Techniques 2.7 Taste finished dishes and discuss their sensory observations using descriptive vocabulary.</p>	<p>Common Core:</p> <p>ELA and Literacy:</p> <p>RI.6.7. Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p>

ROTATION 2 - SPRING					
LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K6 – 5 (85-90 Min)	Frittata	Knife skills, safety, and kitchen systems	<ul style="list-style-type: none"> ▶ Beets ▶ Broccoli ▶ Carrots ▶ Collard greens ▶ Chard ▶ Fennel ▶ Green onions ▶ Kale ▶ Herbs 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 6:</p> <p>Techniques 2.6 Read and follow the recipe, and understand that some recipes are flexible and some are specific</p> <p>Techniques 2.7 Taste ingredients and discuss sensory observations using descriptive vocabulary</p> <p>Concepts 3.8 Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole</p>	<p>Common Core: ELA and Literacy: RST 6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. RST 6-8.10. By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.</p>
K6 – 6 (85-90 Min)	Steamed Dumplings	The Silk Road: China Goods, ideas, and foods that originated in China and were traded along the Silk Road	<ul style="list-style-type: none"> ▶ Greens ▶ Green garlic ▶ Cilantro 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 6:</p> <p>Concepts 3.11 Make connections between the diets of historic cultures and foods we eat today.</p>	<p>California State: History/Social Science: 6.6.2 Explain the geographic features of China 6.6.7 Cite the significance of the trans-Eurasian “silk roads” Common Core: ELA and Literacy: SL.6.1: Engage effectively in a range of collaborative discussions RI.6.7: Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K6 – 7 (85-90 Min)	Vegetable Curry	The Silk Road: India Goods, ideas, and foods that originated in India and were traded along the Silk Road	<ul style="list-style-type: none"> ▶ Cabbage ▶ Cauliflower ▶ Coriander ▶ Cilantro ▶ Greens ▶ Seasonal Vegetables 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 6:</p> <p>Concepts 3.11 Make connections between the diets of historic cultures and foods we eat today.</p>	<p>California State:</p> <p>History–Social Science:</p> <p>6.6.7 Cite the significance of the trans-Eurasian “silk roads”</p> <p>6.6.8 Describe the diffusion of Buddhism northward to China during the Han Dynasty.</p> <p>Common Core:</p> <p>ELA and Literacy:</p> <p>SL.6.1: Engage effectively in a range of collaborative discussions</p> <p>RI.6.7: Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p>
K6 – 8 (85-90 Min)	Homemade, Hand-rolled Pasta & Gremolatta	The Silk Road: Rome Goods, ideas, and foods that originated in Rome and were traded along the Silk Road	<ul style="list-style-type: none"> ▶ Eggs ▶ Lemons ▶ Garlic ▶ Parsley 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 6:</p> <p>Concepts 3.11 Make connections between the diets of historic cultures and foods we eat today.</p>	<p>California State:</p> <p>History–Social Science:</p> <p>6.6.7: Cite the significance of the trans-Eurasian “silk roads”</p> <p>6.7.2: Describe the government of the Roman Republic and its significance</p> <p>6.7.8: Discuss the legacies of Roman art and architecture, technology and science, literature, language, and law.</p> <p>Common Core:</p> <p>ELA and Literacy:</p> <p>SL.6.1 Engage effectively in a range of collaborative discussions</p> <p>RI.6.7: Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K6 – 9 (85-90 Min)	Rice Pudding	Silk Road: Trading for Rice Pudding Culmination of Silk Road	<ul style="list-style-type: none"> ▶ Eggs ▶ Citrus 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 6:</p> <p>Concepts 3.11 Make connections between the diets of historic cultures and foods we eat today.</p>	<p>California State:</p> <p>History-Social Science:</p> <p>6.6.7 Cite the significance of the trans-Eurasian “silk roads”</p> <p>6.7.8 Discuss the legacies of Roman art and architecture, technology and science, literature, language, and law.</p> <p>Common Core:</p> <p>ELA and Literacy:</p> <p>SL.6.1 Engage effectively in a range of collaborative discussions</p> <p>RI.6.7: Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p>

Kitchen Orientation

Summary

This lesson introduces sixth-grade students to the kitchen classroom. Students meet staff, explore the kitchen, learn the basic rules and systems, and practice setting the table to eat a garden snack. Students mark the transition from the garden to the kitchen by harvesting herbs to make herbal tea that they drink with their snack. While eating, they share a food memory.

Objectives

After this lesson, students will be able to:

- ▶ Name and locate the basic tools and equipment in the kitchen.
 - ▶ Practice implementing basic kitchen routines.
 - ▶ Use descriptive language and sensory details to describe a food memory.
-

Assessments

During this lesson, students will:

- ▶ Accurately identify the basic tools and equipment in the kitchen.
 - ▶ Set the table, compost food scraps, and correctly utilize the bussing system.
 - ▶ Share a personal food memory using descriptive language and sensory details.
-

Materials

FOR THE OPENING

- Visual aid
- Question cards

INGREDIENTS

- Seasonal fruits or vegetables
- Tea herbs

TOOLS

- Toolbox
- Heavy-bottomed pot (for heating water for tea on the stove)
- Teapot
- Tea cups
- Tablecloth
- Water pitchers

- Cups
- Plates
- Napkins
- Forks
- Knives

EQUIPMENT

- Stove (or electric kettle, for heating water for tea)

BEFORE YOU BEGIN

- Create the visual aid
- Prepare a seasonal garden snack
- Heat water for tea

Procedures

1 WELCOME AND INTRODUCTION

1. Welcome students, and divide them into three table groups. Table groups are color-coded: green, red, and blue.
2. Introduce kitchen staff, volunteers, and all facilitators of the lesson. Have a student volunteer from each group choose a question from the question cards to ask each staff member as they introduce themselves.
3. Describe what students can expect in the kitchen – cooking and eating together.
4. Emphasize the students' transition from the garden to the kitchen, and invite them to share examples of plants they saw growing in the garden throughout the fall. Explain that they'll get to see how the kitchen and garden interact. We'll be eating produce that comes from the garden, which means we'll be eating "seasonally."
5. Discuss the behavior expectations in the kitchen. Emphasize that the 4B's for how to be in the kitchen are the same as in the garden and their academic classrooms.

2 TABLE GROUP ORIENTATION

1. Break into table groups, and lead a small-group check-in. Explicitly name the rules and expectations for the group check-in: listen actively to speaker, do not interrupt or comment on people's answers, move quickly from one speaker to the next. (What is your comfort food?)
2. Go on a walking tour of important kitchen features and systems: recycling and compost row, dish tower and tortilla press cabinet, dish cabinet, the altar, spice table, metro shelf, oven, fridge, bussing station and graywater system, and dishwasher. While on the tour, prompt students to reflect on whether each system is a "kitchen-only" system (i.e., laundry, dishes) or a "kitchen-garden" system (i.e., compost, graywater).
3. Bring students outside to the herb garden. Have every student pick two leaves to bring inside, wash, and add to a teapot for herbal tea.
4. Return to table groups and give students time to explore their cooking stations and toolboxes. While at the cooking stations, challenge students to find one tool or item that everyone recognizes, and one tool or item that no one in the group is familiar with. While exploring the toolboxes, ask students to report on their findings using the "I notice, I wonder, It reminds me of" sentence frame. Introduce the reflection cards.
5. Quiz the group after exploration time to help them recall the names, uses, and locations of basic tools, ingredients, and equipment.
6. Explain to students that they are responsible for cleaning and maintaining the tables, the toolboxes, and the cooking stations.

3

PRACTICING KITCHEN RITUALS

1. Describe to students the items needed to set the table (tablecloth, centerpiece, tea cups, napkins, water, and cups). While students are setting the table, fill the teapot with boiling water and allow the tea to steep.
2. Eat.
3. While eating, encourage students to share a food memory, or use the question cards to engage the full group in shared conversation.
4. Flicker lights. Explain this is a way we get everyone's attention. Announce that now it is time to transition into bussing dishes.
5. Have students familiarize themselves with the kitchen systems by composting, bussing dishes, and refilling water pitchers.

4

AT THE CLOSING CIRCLE

1. Invite students to share their food memories.
2. Invite students to share something they still wonder about the kitchen.
3. Answer any remaining questions.

Teaching Notes

Introducing the teachers: We use the question cards to introduce ourselves to the students because it models showing up in a genuine way. We find students are often quite captivated by teachers' responses to challenging questions.

The 4B's: We introduce the 4B's with short skits. First we demonstrate what not to do and ask students to give a thumbs-up or thumbs-down—are we following the 4B's? We call on students with raised hands to give corrections, and then do the demonstration again with correct behavior or practices.

Be concise: Avoid "lose interest" point. Labels are things students need to know the names of.

Collaboration with academic teachers: Academic teachers complete the food memory activity with their students before their first kitchen lesson so that students are prepared to share a memory at the table.

Sharing food memories: Sharing a food memory can be a vulnerable experience for some students. Throughout this lesson, and especially while students are sharing their food memories, teachers are mindful and explicit in facilitating a respectful, safe environment for all students to engage with the group.

Vocabulary

- ▶ Seasonal
 - ▶ Altar
 - ▶ Griddle
 - ▶ Organic
 - ▶ Metro shelf
 - ▶ Dish tower
 - ▶ Cubbies
 - ▶ Fridge
 - ▶ Spice table
 - ▶ Dish cupboard
 - ▶ Bussing station
-

☑ Connections to Standards

CALIFORNIA STATE, ENGLISH–LANGUAGE ARTS, GRADE 6

- 2.1.A.** Establish and develop a plot and setting and present a point of view that is appropriate to the stories.

COMMON CORE LANGUAGE STANDARDS, GRADE 6:

- LS.4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.
- LS.6.** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN, GRADE 6

- Tools 1.1** Identify basic tools at the ESY Cooking Station and use and care for them with guidance.
- Tools 1.2** Identify measuring tools from the ESY Toolbox and follow instructions to use and care for them.
- Tools 1.3** Identify different knives from the ESY Toolbox and demonstrate basic knife skills, safety, and care.
-

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.

Resources

- ☑ Food Memory Worksheet
- ☑ Kitchen Orientation Visual Aid
- ☑ Kitchen Floorplan



The Edible Schoolyard

Food Memory Activity

FOOD
MEMORY

WHO WAS THERE?

WHAT SEASON WAS IT?

WHAT WAS THE OCCASION?
WHAT WERE THE FLAVORS,
AROMAS,
SOUNDS?





Sample Question Card Questions

- What is the scariest thing about becoming an adult?
- What is something you want to learn that they don't teach you in school?
- If you could change anything about yourself, what would it be?
- Why do you think people give up on their dreams?
- If you could be famous, what would you be famous for?
- If you could live anywhere, where would you live?
- If you could bring back one person from the dead, who would it be?
- What is the first step toward ending racism?
- Why do you think we need to go to school?
- What is your most important goal right now?
- What is one lesson that you had to learn the hard way and what did you learn?
- What is the worst crime against humanity?
- What are your three best and worst qualities?
- What is your most prized possession and why?
- What do you like most about yourself?

If you could teach any class, what would it be?

If you could have any talent, what would it be?

When do you feel the most protected?

Do you believe a person is defined by what he or she does for a living?

What is your greatest fear about having children?

What is one of your most beautiful childhood memories?

What makes you angry and how can you change that?

How do you think others view you and why?

What is a piece of wisdom that you would pass on to your kids about being your age?

What question would you like to be asked?

What is your biggest accomplishment and why?

What is something you wish you could change about your life?

What is your greatest fear?

If you could change one law, what would it be?

What are three traits you look for in a friend?

If you could visit any time period, which would you choose?

Would you rather have a job with average pay that you love or a job with great pay that you hate?

What language would you like to speak fluently?

If you could supersize one of your senses, which one would it be?
(taste, sight, touch, hearing, smell)

What makes you happy?

If you could make any dish in the world, what would you make?

Do you consider yourself an optimist or a pessimist?

Who is someone that you admire and why?

Would you rather live in the city or in the country?

What is an essential life skill you need in order to live on your own?

What is a misconception that people have about you?

Where is your favorite place to read?

What historical person do you admire and why?

If you could rename the Golden Gate Bridge, what would you call it?

Would you rather explore the deep sea or outer space?

What do you do when you are talking with friends and someone makes an offensive
(i.e. racist, sexist, homophobic) comment?

Which is more powerful: love or hate?

What is one goal you want to achieve in the next year?

What does loyalty mean to you?

If your life had a soundtrack, what would be theme song and why?

If you could travel anywhere in the world, where would you go and why?

If you won 1 Million dollars and could use it for anything but yourself, how would you use it?

Does climate change concern you? Why or why not?

What is one thing you wish adults understood better about young people and why?

What is one thing you wish you understood better about adults and why?

If you could meet one historic figure, living or dead, who would it be and why?

If you had 5 minutes to meet with the US President, what would you say?

If you were stranded on an island and could only bring 3 things what would you bring and why?

What is one thing people don't know about you that you wish they knew?

Who is your favorite character in a book and why?

Do you think people under 18 should be allowed to vote? Why?

Greens over Grains

Summary

In this sixth-grade humanities lesson, students complete the seed-to-table cycle by preparing sautéed greens and serving them over grains that were grown in the Edible Schoolyard garden. Students learn and practice basic knife skills and safety.

Objectives

After this lesson, students will be able to:

- ▶ Identify a variety of greens by name.
 - ▶ Practice basic knife skills while demonstrating proper knife safety and care.
 - ▶ Follow a written recipe to prepare a basic dish.
-

Assessments

During this lesson, students will:

- ▶ Identify a variety of greens by name.
 - ▶ Mince or slice ingredients while demonstrating proper knife technique, safety, and care.
 - ▶ Distinguish between the “Ingredients” and “Directions” sections of the Sautéed Greens recipe and follow the recipe’s written instructions to prepare the greens.
-

Materials

FOR THE CHEF MEETING

- Sautéed Greens recipe
- Ingredients and tools for demonstration
- Visual aid

INGREDIENTS

- Assorted grains (such as millet, quinoa, and/or barley)

FOR THE SAUTÉED GREENS

- Assorted greens (such as dinosaur kale, bok choy, rainbow chard, and collards)
- Olive oil
- Ginger
- Garlic
- Soy sauce
- Toasted sesame oil
- Rice vinegar (optional)

TOOLS

- Cast-iron skillet
- Garlic peeler
- Wooden spoon
- Chef's knives
- Paring knives
- Cutting boards
- Measuring cups
- Measuring spoons

EQUIPMENT

- Stove

BEFORE YOU BEGIN

- Collect all the tools and ingredients, and then distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Create the visual aid.
- Copy the Sautéed Greens recipe to hand out.
- Copy the Millet & Quinoa recipe to hand out.
- Cook the grains (millet, quinoa, and/or barley).

Procedures

1 AT THE CHEF MEETING

1. Welcome students to the kitchen. Review the 4B's: Be Safe, Be Responsible, Be Respectful, and Be an Ally. Emphasize that today, as the students' first time cooking in the kitchen, they will have the opportunity to practice these 4B's.
2. Introduce the lesson for the day: Greens over Grains. This is a chance for students to prepare food from the garden while learning basic knife skills, safety, and care.
3. Ask students if there are any foods on the board that they recognize growing in the garden.
4. Ask students to identify the greens by name. Emphasize that they may use the visual aid as a resource. Hold up the greens one by one. Ask students to raise their hands quietly when they know what a green is called, and all call out the name on the count of three. For some greens, have students yell as loudly as they can, for others have them whisper, or ask them to identify the greens in happy, tired, confused, or other kinds of emotive voices.
5. Show students a copy of the Sautéed Greens recipe. Explain that they have just identified most of the ingredients they'll be using, and that these recipes will give them all the information they need about what to do with those ingredients—at the top of the recipe is a list of ingredients and amounts, and the bottom has the directions, or what to do with the ingredients. Emphasize that the 4B's will be especially important for the students to successfully prepare the meal because our goal as teachers is to have them work as independently as possible. The recipe and their group mates will be their most valuable resources.
6. Ask students to wash their hands and go to their table groups.

2

AT THE TABLE

1. Break into table groups, and lead a small-group check-in. (What is a food that you would like to learn how to cook?)
2. Demonstrate how to mince the garlic and prepare the greens as part of a knife skills and safety demonstration (see “Knife Skills and Safety Demonstration” resource).
3. Assign cooking jobs.
4. Prepare the recipe and set the table.
5. Eat.
6. Clean up.

3

AT THE CLOSING CIRCLE

1. Ask students to rate the meal on a scale of 1 to 5. If there is time, ask students to name one new skill or fact that they learned in the class today.

Teaching Notes

Identifying the greens: We like to vary how we ask for the students to respond when they are identifying the greens by name in the Chef Meeting. Mixing high- and low-volume responses helps to modulate the energy and prepare them to be attentive listeners during the knife skills and safety demonstration. Introducing the greens this way is fun, and generates ownership and excitement around the food.

Visual aid: Clearly labeled visual aids that identify the ingredients in this lesson are key in creating access for all of our students. Different students enter the kitchen with varying experiences with cooking and the ingredients we use in this lesson. We want all of our students to be able to participate fully from the beginning, and we never want a student to feel inadequate or unwelcome for not already knowing something that one of their peers does. When we ask students to identify the greens during the Chef Meeting, we explicitly refer to the visual aid as a “resource” and ask students to “do their research” before we ask for them to call out the name. We wait to ask for them to call out the name until all hands are in the air. Asking students to call out as a group instead of calling on individual raised hands is an equity strategy because it provides access for students who reach the answer more slowly than their peers.

Bok choy and cultural imperialism: We have noticed that some of our students respond to the name “bok choy” by mocking it with caricatured chicken-like clucking noises or saying the name with a stereotypical Asian immigrant accent. We have noticed a similar pattern in recipes that use hoisin sauce, which some students will jokingly refer to as “poison sauce.” Though such reactions are meant jokingly and almost always represent no intentional malice or ill-will on the part of the student, we still recognize them as manifestations of the xenophobia and racism in American culture that labels anything outside of mainstream, dominant white culture as “other.” We address these moments

as they occur, often by naming what we see, asking a question that prompts the student to reflect more critically on their response, or prompting the student to consider their response from another's point of view ("It sounds to me like you're making fun of the name of this ingredient. Is that what you mean to be doing when you say that/make that noise?"; "What makes you say that/make that noise? Do you think you would make similar jokes about X ingredient that you're familiar with?"; "How do you think you would feel if I made fun of X ingredient that is important to you?"). We also address these reactions preemptively in our Chef Meetings. We explain to students that they may be encountering ingredients and foods that they are unfamiliar with in the kitchen, and that sometimes lack of familiarity can lead to impulses to mock or make fun of something. We encourage them to notice these impulses when they arise and make the choice to lean into that discomfort instead of pushing it away—ask a question because there will almost undoubtedly be someone at the table who is quite familiar with the food.

Recipe reading: We explicitly introduce the format for reading the Sautéed Greens recipe, noting that many recipes will have a similar format—a list of ingredients with their amounts at the top and directions at bottom. We emphasize that you must read the directions to know what to do with the ingredients.

Knife skills and safety demonstration: This is the first time our sixth-grade students work with knives in the kitchen space so we start the lesson with a knife skills and safety demonstration. As part of the demonstration, we recognize that some students might have experience with knives at home, but that the guidelines around knives in this space are different because there are different concerns and constraints with so many people working at once. This helps to draw the attention of students who may otherwise feel that the guidelines are irrelevant to them. For a more detailed description of our knife demonstration, see "Knife Skills and Safety Demonstration" resource.

Help and consent: Because this is the first time cooking with these students, we pay special attention to noting the skills and levels of experience with cooking our students are bringing to the table. We moderate group dynamics so that every student feels welcome, accomplished, and a sense of ownership over the space regardless of cooking skills. For experienced students wanting to showcase those skills by helping their less-experienced peers, we often prompt them to ask their peers if they want or need support before they jump in to "helping" them.

Team-building and cleaning: As the first time cooking in the space, this is also the time to establish team ownership of tasks including cleaning.

Academic connections: This lesson is an excellent opportunity to review the seed-to-table cycle or the Paleolithic domestication of grains (6th Grade California State History-Social Science Content Standard 1.3). In years past, we have included both of these themes in our Chef Meeting. We decided not to this year in order to cut down on the direct instruction that happens at the beginning of class to make sure we have all of the students' fresh attention for the knife safety and skills demonstration, and to give plenty of time to cooking and eating.

Double-sided recipes: We like to copy the Millet & Quinoa recipe on the back of the Sautéed Greens recipe so that that students can easily take both recipes home.

Vocabulary

- ▶ Sauté
 - ▶ Chop
 - ▶ Mince
 - ▶ Fibrous
 - ▶ Slice
 - ▶ Whole grain
-

☑ Connections to Standards

CALIFORNIA COMMON CORE ENGLISH LANGUAGE ARTS STANDARDS, SCIENCE & TECHNICAL SUBJECTS

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

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN, GRADE 6

Tools 1.3 Identify different knives from the ESY Toolbox and demonstrate basic knife skills, safety, and care with guidance.

Techniques 2.4 Identify ingredients by name, and discuss them using descriptive words in conversation

Concepts 3.8 Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.

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.

URLS

Read about this lesson in the ESY Berkeley Journal
<http://edibleschoolyard.org/esy-berkeley/journal>

Resources

- ☑ Greens over Grains Visual Aid
- ☑ Sautéed Greens Recipe





Millet & Quinoa

- 2 cups dry millet
- 1/4 cup dry quinoa
- 4 1/2 cups water
- Pinch of salt (optional)



1. Put millet, quinoa, water, and salt (if using) in a pot or rice cooker.
2. Over medium-high heat, bring to a boil, then reduce heat to low, cover pot, and allow to simmer until all the water has been absorbed by the grain - 15 to 20 minutes.
3. Remove the pot from the heat and let stand for 5 minutes, covered. Don't peek!
4. Remove the lid and use a fork to gently fluff the grain.
5. **EAT!** (delicious served under greens...)

VARIATIONS:

- * stir in 2 tablespoons of butter or coconut oil during step 4, when fluffing.
- * Substitute some or all of the water for stock in step 1.
- * Toast the dry millet in a pan on the stove over medium heat for 5 minutes, or until golden-brown and fragrant, before adding the quinoa + water.

Sautéed GREENS



3 bunches greens, sliced or chopped
(kale, collards, chard, bok choy)

3 Tablespoons olive oil

1 inch piece ginger, minced

8 cloves garlic, minced

4 tablespoons soy sauce

2 Tablespoons sesame oil

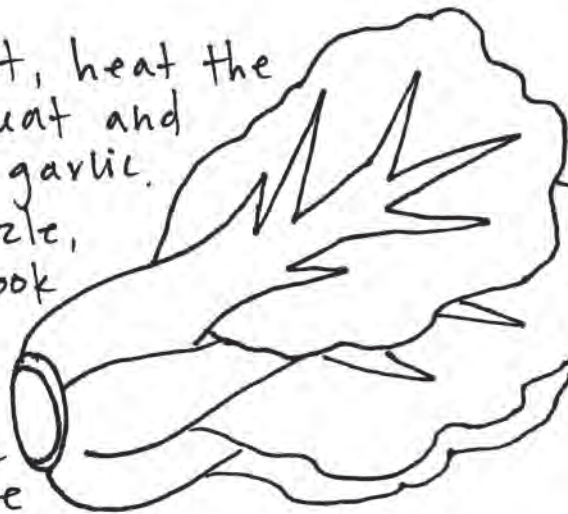
1 Tablespoon rice vinegar (optional)

Wash the greens in cold water - remove the round stems (kale, collards) and slice the flat stems (chard, bok choy). Put the leaves and stems in separate bowls.

In a heavy bottomed pot, heat the olive oil over medium heat and stir in the ginger and garlic.

When they begin to sizzle, add the flat stems and cook for 1-2 minutes. Add the greens, and when they

are half cooked, add the soy sauce, sesame oil, and rice vinegar. Cook until tender and serve over grains.



Pan de los Muertos

Summary

In this sixth-grade humanities lesson, students prepare Pan de los Muertos to honor people or animals in their lives who have passed. They learn about the holiday of Día de los Muertos, and practice measuring precisely.

Objectives

After this lesson, students will be able to:

- ▶ Identify measuring tools from the ESY Toolbox.
 - ▶ Demonstrate precise measurement when following a recipe.
 - ▶ Discuss the traditional view of death in Día de los Muertos and articulate the role of food in honoring loved ones in the holiday.
-

Assessments

During this lesson, students will:

- ▶ Select the correct measuring tool for each ingredient in the Pan de los Muertos recipe.
 - ▶ Practice precise measurement to follow the Pan de los Muertos recipe to completion.
 - ▶ Shape a piece of bread dough into a shape that honors someone in their life who has passed and write a remembrance to place on the Día de los Muertos altar that celebrates that person's or creature's life.
-

Materials

FOR THE CHEF MEETING

- Pan de los Muertos recipe
- Ingredients and tools for demonstration
- Visual aid

INGREDIENTS

FOR THE PAN DE LOS MUERTOS

- | | |
|--|--|
| <input checked="" type="checkbox"/> Flour | <input checked="" type="checkbox"/> Orange zest (optional) |
| <input checked="" type="checkbox"/> Amaranth flour | <input checked="" type="checkbox"/> Eggs |
| <input checked="" type="checkbox"/> Baking powder | <input checked="" type="checkbox"/> Milk |
| <input checked="" type="checkbox"/> Sugar | <input checked="" type="checkbox"/> Vegetable oil |
| <input checked="" type="checkbox"/> Salt | |

FOR THE TOPPINGS

- Assorted seasonal fruit, such as apples, pears, and persimmons
- Assorted dried fruit, such as dried apricots, cranberries, raisins, and dates
- Assorted seeds, such as pepitas (pumpkin seeds), sunflower seeds, and sesame seeds
- Cinnamon
- Sugar

TOOLS

- Sheet pan
- Parchment paper
- Mixing bowls
- Wooden spoons
- Measuring beaker
- Measuring cups
- Measuring spoons
- Zester

EQUIPMENT

- Stove
- Oven

FOR THE ALTAR

- Table
- Tablecloth
- Construction paper
- Colored pencils
- Graphite pencils or pens

BEFORE YOU BEGIN

- Collect all the tools and ingredients and distribute them to the tables.
- Prepare the cinnamon-sugar topping.
- Gather supplies for the Chef Meeting.
- Create the visual aid.
- Copy the Pan de los Muertos recipe to hand out.
- Set up a Day of the Dead altar.
- Cut up construction paper for the remembrances and place on the altar with colored pencils for writing.

Procedures

1 AT THE CHEF MEETING

1. Welcome students back to the kitchen and introduce the lesson for the day: today we are going to celebrate Día de los Muertos by making Pan de los Muertos. Who knows the name for this holiday in English? Day of the Dead. Can anyone tell us a little bit about this holiday? What does it celebrate? How do people celebrate it?
2. Day of the Dead is a holiday that remembers and honors the lives of loved ones who have died. The modern holiday combines 3000-year old Aztec traditions of honoring the “Lady of the Dead” with a full month of festivities with the Catholic observance of All Saints Day and All Souls Day. It takes place on November 1 and 2 and is celebrated throughout Latin America and places around the world with a Latino population.
3. There are many ways to participate in the Day of the Dead. In Mexico and other parts of Latin America, families visit the graves of their loved ones. They clean and decorate the graves, tell endearing and humorous stories, share memories, and prepare and eat their loved one’s favorite foods. It is not considered a sad day, but a

day to awaken the dead from their eternal sleep and honor their memories. Families will often create altars or ofrendas where they place food, flowers, candles, photos, and mementos. A traditional offering for the altar is Pan de los Muertos, or Bread of the Dead. That is what we're making today.

4. Can anyone think of another holiday that falls around that time of year, maybe near the end of October, that deals with the theme of death? Halloween. Halloween and Día de los Muertos share the theme of death, but actually have completely different origins. Halloween originated with Celtic pagan rituals in Northern Europe. There are holidays all around the world that happen at this time of year that deal with the theme of death.
5. Why do you think these two holidays might happen around this time of year? They mark the turning of the season—the transition from the fall harvest to the colder, darker winter months. They both began as ways for human societies to honor death as a part of the human experience.
6. In the cultural tradition of Mexico, and much of Latin America, Day of the Dead celebrates death as a part of the human experience, not a time of grieving and sadness. In fact, tradition holds that to be sad would offend the dead, so Day of the Dead festivities honor them with laughter and joy.
7. Today we will be celebrating Day of the Dead by making Bread of the Dead. You will be making the dough and then dividing it among your table-mates. Each of us will make a piece of bread to honor someone who has died. Once you decide who you would like to remember and honor, you will form your dough into a shape that represents them in some way. Maybe your Grandma loved to fish and you make your bread into a fish shape; maybe you had a beloved hamster who slept in a sock and you shape your bread into a sock to represent them. You may choose to honor someone you knew personally or someone from history whom you admire but never met. What is important about this lesson is that you choose someone who means something to you. Traditionally Bread of the Dead is baked and placed on the altar. Today we will be eating the bread we make and placing a written remembrance on our altar. You may choose to share your remembrance or keep it private.
8. In this lesson, we'll be engaging with food as something that nourishes not just our physical health but our emotional and spiritual health as well. The ritual of making food offerings to the spirits of those who have passed for Day of the Dead recognizes that food is deeply emotional, and can strengthen our connections to people who have passed, as well as the communities we surround ourselves with. Today as we bake, reflect on a food that that nourishes more than just your body.
9. Ask students to wash their hands and join their table group.

2

AT THE TABLE

1. Small-group check-in: What is your favorite baked good?
2. Meet with the table groups to review the recipe, check in, and assign jobs.

3. Review measuring tools (measuring beaker, measuring cups, and measuring spoons) and the different measuring increments (i.e., 1 tablespoon, 1 teaspoon, ½ teaspoon). Explain how to measure precisely.
4. Prepare the recipe and set the table.
5. While the bread is baking, invite students to write a remembrance and place it on the altar.
6. Eat. While the students are eating, invite them to share whom they made the bread for, what shape they chose, and why.
7. Clean up.

3

AT THE CLOSING CIRCLE

1. Ask students to rate the food on a scale of 1 to 5. Ask students to rate the experience on a scale of 1 to 5.

Teaching Notes

Allergies: we double-checked before every class that we knew of all the students with allergies or eating restrictions that would prevent them from enjoying the recipe as written. We created alternate recipes for those students to cook and eat. For vegan bread, we substituted 2 tablespoons applesauce for 2 eggs and an equal amount non-dairy milk for dairy milk. For gluten-free bread we substituted 1:1 gluten-free flour mix for wheat flour (amaranth flour is gluten-free).

Creating space for grief: some of our students came into this lesson in various stages of grief, and every student had different norms, levels of comfort, and strategies for engaging with the theme of death. We communicated with teachers and counseling staff before each lesson to be aware of students who might need extra support. We never forced a student to share more than they wanted to (we were explicit with the “opt-out” option during all group discussions) and held ourselves and our students to rigorous standards of respect (sometimes using the language of “risk and respect” to honor that sharing something important or intimate can feel like a risk and should be met with equivalent respect). We recognize that even with our best intentions, this lesson still was not altogether enjoyable or easy for some of our students freshly dealing with grief. This remains an area of growth for us.

Planning for success: we asked students to start thinking about who they were going to shape their bread for as they were washing their hands. If students had a specific idea about who they were shaping their bread for, we found the activity was far more successful, focused, and meaningful.

Personal anecdotes: at the small group, either before dividing into jobs or just before handing out dough, teachers shared a personal anecdote about who we were making our bread for. We didn’t necessarily go into the details of how the person died, but focused instead on remembering and honoring the person’s life and our memories of them. We found

that these stories were helpful to students to hear, both in choosing who they would make their bread for and how they would shape it, and also for setting the tone for them to engage thoughtfully with the lesson. Often these stories prompted very thoughtful discussion around death, grief, and mourning, and sometimes were met with reciprocal shares from students who felt safe to be more vulnerable after the teacher created space for that.

Toppings and mix-ins: we found that the toppings and mix-ins were crucial for the students to have enough work. Class runs much more smoothly when students are occupied with enough cooking jobs. We also found that having a variety of toppings inspires artistry and care with the activity. Mixing the nuts and fruit into the dough while shaping can be fun and make bread more delicious.

Kneading: we found that class ran the most smoothly when the teacher partially or fully kneaded the dough. Especially at the beginning, the dough will be sticky, so having a teacher knead was necessary for time's sake. This was a good time to explain how kneading builds structure in the dough by organizing the gluten to yield bread with a springier texture. Students often noticed how much smoother it became.

Cleaning with flour: clean the dough out of the bowl and off hands with flour. This saves dough and saves the drain from getting clogged.

Cinnamon sugar: we found that having the teacher sprinkle cinnamon sugar on the bread right before baking helped to avoid a sugar-frenzy.

Measuring games: anticipating some down time while the students were waiting for the bread to bake, we developed a few measuring games for students to practice precise measurement. At one station we put a quart-size yogurt container filled with water, a measuring beaker, and some measuring spoons in a bus tub. On a note card, we asked them to figure out how many cups were in a quart, and how many tablespoons were in a quart. At a second station, we put a bowl of flour, a cup measure, and a baking scale in a bus tub. On a note card, we asked students to see what the heaviest cup of flour they could make was, and what the lightest cup of flour they could make was. At a third station, we put a bowl of salt, an empty bowl, some measuring spoons, and a ¼-cup measure in a bus tub. On a note card, we asked how many teaspoons were in a tablespoon, how many tablespoons were in a ¼ cup, and how many teaspoons were in a ¼ cup. At a final station, we filled a large clear container with dried rice and asked students to estimate how many cups were in the container, promising a prize at the end of the lesson rotation to the student with a closest estimate.

Vocabulary

- ▶ Altar
- ▶ Knead
- ▶ Ofrenda
- ▶ Ritual

Connections to Standards

COMMON CORE: ELA AND LITERACY:

RI.6.7: Integrate information presented in different media or formats

COMMON CORE: READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS 6-12:

RST.6.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

COMMON CORE: READING STANDARDS FOR LITERACY IN HISTORY AND SOCIAL STUDIES 6-12:

RH.6.4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN, GRADE 6

Tools 1.2 Identify measuring tools from the ESY Toolbox and follow instructions to use and care for them.

Techniques 2.5 Use basic techniques as instructed, and refer to them by name in conversation.

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.

URLs

Read about this lesson in the ESY Berkeley Journal

<http://edibleschoolyard.org/esy-berkeley-journal/2009/11/13/knife-skills>

Resources

- Pan de Los Muertos Visual Aid
- Pan de Los Muertos Recipe





Quando nasce,
tutto viene da
sopra, e allora
questo è il momento
più importante della
vita. È il momento
in cui si decide se
si sarà un
bambino o una
ragazza.

Dear Dad,
I'm happy you were
born. I'm happy you
were born. I'm happy
you were born. I'm
happy you were born.
Love,
Your daughter,
Mia

Even dead, you are with you, always.
Mia
Loving you
Loving you

PANDELOS MUERTOS



DRY INGREDIENTS:

- 3½ cups white flour
- ½ cup amaranth flour*
- 4 teaspoons baking powder
- 4 tablespoons sugar
- ½ teaspoon salt

WET INGREDIENTS:

- 2 eggs
- 1⅓ cups milk
- ½ cup vegetable oil

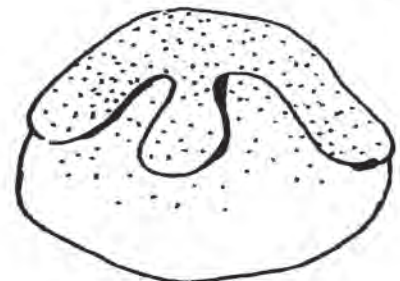
TOPPING:

- 1 teaspoon cinnamon
- ½ cup sugar

Preheat oven to 350°. Combine topping ingredients and set aside. In a large bowl, combine the dry ingredients. In a medium bowl combine the wet ingredients and mix well. The dough will be sticky.

Sprinkle flour on a clean surface and put a little on your hands. Mold the dough into any shape you like. Place dough on a cookie sheet (greased) and sprinkle topping on it. Bake for 15-20 minutes, until golden brown.

*Amaranth flour is a traditional addition. You may substitute any whole grain flour such as whole wheat or buckwheat.



Autumn Harvest Soup

Summary

In this sixth-grade humanities lesson, students prepare a soup with vegetables harvested from the fall garden while they practice knife skills and learn the basics of making stock.

Objectives

After this lesson, students will be able to:

- ▶ Understand how to make vegetable stock.
 - ▶ Demonstrate basic knife skills and care.
 - ▶ Read and follow a recipe to make Autumn Harvest Soup.
 - ▶ Taste the soup and adjust seasoning.
-

Assessments

During this lesson, students will:

- ▶ Prepare the vegetables for the Autumn Harvest Soup, and sort the remaining parts for the stockpot or the compost.
 - ▶ Choose the proper tool for the job.
 - ▶ Follow the recipe to completion.
 - ▶ Taste and season the soup.
-

Materials

FOR THE CHEF MEETING

- Autumn Harvest Soup recipe
- Ingredients and tools for demonstration
- Visual aid

INGREDIENTS FOR THE AUTUMN HARVEST SOUP

- | | | |
|---|---|--|
| <input checked="" type="checkbox"/> Olive oil | <input checked="" type="checkbox"/> Winter squash | <input checked="" type="checkbox"/> Chard |
| <input checked="" type="checkbox"/> Leeks | <input checked="" type="checkbox"/> Assorted greens | <input checked="" type="checkbox"/> Tomatoes |
| <input checked="" type="checkbox"/> Carrots | <input checked="" type="checkbox"/> Tomatoes | <input checked="" type="checkbox"/> Salt |
| <input checked="" type="checkbox"/> Celery | <input checked="" type="checkbox"/> Thyme | <input checked="" type="checkbox"/> Pepper |
| <input checked="" type="checkbox"/> Garlic | <input checked="" type="checkbox"/> Parsley | |
| <input checked="" type="checkbox"/> Pumpkin | <input checked="" type="checkbox"/> Vegetable stock | |

TOOLS

- 2 stockpots
- Strainer
- Garlic peeler
- Wooden spoon
- Ladle
- Chef knives
- Paring knives
- Cutting boards
- Measuring beaker
- Measuring cups
- Measuring spoons

EQUIPMENT

- Stove

BEFORE YOU BEGIN

- Collect all the tools and ingredients, and then distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Create the visual aid.
- Copy the Autumn Harvest Soup recipe to hand out.
- Prepare the vegetable stock (for the first class).
- Warm vegetable stock on the griddle.

Procedures

1

AT THE CHEF MEETING

1. Welcome students and introduce the Autumn Harvest Soup recipe. Explain that Autumn Harvest Soup is a seasonal recipe and that the largest harvest of the year is in the fall.
2. Invite students to name vegetables that are in season based on what they've seen growing in the garden or the produce they see available at the store. Introduce the vegetables we will be using in the Autumn Harvest Soup.
3. Describe the difference between a recipe that needs to be followed precisely and a recipe that is flexible, like Autumn Harvest Soup. A flexible recipe can be adjusted with what is in the garden or on hand.
4. Explain that for the Autumn Harvest Soup recipe, although the specifics are flexible, we'll be making the soup by following a specific set of steps that helps to build the best flavor. First, we'll cook our aromatics, including onions, garlic, and herbs. This infuses the cooking oil with flavor and brings lots of flavor to the finished dish. Then we'll add the vegetables and cook them partially, so that they are all coated with the flavored oil. Then we'll add the stock and simmer to finish cooking the vegetables and allow the flavors to combine.
5. Introduce the term "vegetable stock." Explain that cold water heated slowly over low heat extracts flavor from the vegetables. Ask students to use the visual aid to identify which parts of the vegetables will be used for the soup, the stock, or put into the compost.
6. Ask students to wash their hands and divide into their table groups.

2

AT THE TABLE

1. Break into table groups, and lead a small-group check-in. (What is your favorite kind of soup?)
2. Refer to Greens over Grains to review that different vegetables and various parts of the same vegetable can cook at different rates. Divide vegetables into two categories, based on how long they take to cook. Explain that students will be using this concept to decide what size they cut the vegetables and what order they add them to the soup.
3. Review the recipe, and demonstrate how to cut different vegetables.
4. Assign jobs.
5. Prepare the recipe.
6. Ask students to taste the soup and adjust the seasoning. Demonstrate how to taste hygienically.
7. Set the table; eat; clean up.

3

AT THE CLOSING CIRCLE

1. Ask students to use their hands to rate the soup on a scale of 1 to 5. If there is time, ask students to share what their favorite vegetable in the soup was, or how they would adjust the recipe if they were to make it at home.

Teaching Notes

The aromatics: This is an excellent lesson to introduce students to the concept of building flavor by starting any dish by cooking a basic mix of finely chopped vegetables, herbs, or spices in oil. It can be fun to compare the different ingredients commonly used in a variety of cuisines: mirepoix in France (carrots, celery, onions), soffritto or battuto in Italy (carrots, celery, onions, and often herbs or pancetta), suppengrün in Germany (carrots, celery root, leeks), the “holy trinity” of Cajun cooking (onion, celery, green bell pepper), and minced garlic, ginger, green onions, and spices in various Asian cuisines. Ask students to share if there are any basic ingredients that are frequently used in their kitchens at home.

Stock: We find that although it is a very simple job, students really enjoy making stock during this lesson. Encourage them to smell the stock and ask if they can identify what ingredients are in it based on the smell.

Jobs: We like to divide students into jobs by having them choose to work on aromatics, crunchy, or leafy vegetables. Because understanding these three basic categories is one of the main objectives in this lesson, we find that identifying which group they want to work with helps them to retain a better understanding of the different categories.

Knife skills and flavor: In addition to reflecting on how the density and size of a vegetable may affect its cooking rate, we also invite students to try cutting their vegetables in a couple different shapes and tasting them—does the shape of a vegetable affect its flavor? This type of exploration often gives students the confidence to make their own judgment calls

about what size and shape they want to cut their vegetable. Student ownership of the recipe and cooking process is our goal.

Right tool for the job: This is only the second lesson in which our students use knives, so we focus on supporting every student to understand how to choose the right tool for the job.

Knife techniques: Depending on the skill level of a group, we'll often review basic knife techniques (dicing, slicing, mincing) before breaking up into jobs.

Collaborative process: We like to emphasize with students that making the soup will be a group process ("We're all working on parts of a recipe. You may not see the whole thing through"). This is a helpful reminder for some students to make sure everyone gets a chance at the stove and everyone takes a turn at the sink.

Tasting hygienically: This lesson is an excellent opportunity to demonstrate to students how to taste hygienically, by putting some of the soup from a serving spoon onto their own personal tasting spoon, as opposed to dipping their tasting spoon into the soup pot.

Tasting and group decision-making: This is a chance to practice group decision-making around how to season the soup before eating it. We like to gather the whole group around the stove with tasting spoons and have the teacher serve small tasting portions onto personal spoons with a serving spoons. Everyone tastes, and then holds up their fingers, 1 to 5, to indicate how much salt they want to add. Do this for a couple rounds. Emphasize that you can always add salt or spice, but you can't take it out.

Hot sauce diversity: We made multiple hot sauces available to our students during this lesson (Crystal, Tapatío, Cholula, Sriracha). Students often identified very strongly with one or two hot sauces and were very happy to see their own hot sauce because it was an opportunity for them to see their culture represented in the space.

Vocabulary

- ▶ Vegetable stock
- ▶ Harvest
- ▶ Dice
- ▶ Ladle

☑ Connections to Standards

COMMON CORE, ENGLISH LANGUAGE ARTS, GRADE 6

RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN, GRADE 6

Tools 1.3 Identify different knives from the ESY Toolbox and demonstrate basic knife skills, safety, and care.

Techniques 2.6 Read and follow recipes, and understand that some recipes are flexible and some are specific.

Techniques 2.7 Taste finished dishes and discuss their sensory observations using descriptive vocabulary.

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.

Resources

- Autumn Harvest Soup Visual Aid
- Autumn Harvest Soup Recipe





- 4 tablespoons olive oil
- 2 leeks, thinly sliced - white stalk only, save greens for stock
- 3 carrots, peeled and chopped - save peels for stock
- 3 ribs celery, chopped - save ends for stock
- 3 cloves garlic, peeled and minced - save peels for stock
- 3 cups pumpkin, peeled and cubed - save peels and pulp for stock
- 3 cups squash, cubed
- 5 sprigs thyme
- 3 tablespoons minced parsley leaves - save stems for stock
- 10 cups vegetable stock
- $\frac{3}{4}$ cup bulgur soaked in water until tender, drained (approximately 20 minutes)
- 1 bunch chard
- 5 medium tomatoes - diced
- salt and fresh ground pepper



In a large stock pot, heat olive oil over medium heat. Add the leeks, carrots, celery and garlic, and saute' for 5 minutes. Add the pumpkin, squash, thyme, parsley and vegetable stock, bring to a simmer and cook for 10-15 minutes or until the squash and pumpkin are tender. Add the bulgur, chard and tomatoes, and simmer for another 10 minutes. Season with salt and freshly ground pepper. Serve to friends and family!

AUTUMN HARVEST SOUP



4 TABLESPOONS OLIVE OIL

AROMATICS:

3 CARROTS

1 ONION

3 STALKS CELERY

4 CLOVES GARLIC

6 SPRIGS ASSORTED FRESH HERB
SUCH AS PARSLEY, THYME, OREGANO
OR BASIL



CRUNCHY VEGETABLES:

3-4 CUPS CRUNCHY VEGETABLES SUCH
AS: SQUASH, POTATOES, PUMPKIN, BEETS,
OR TURNIPS



LEAFY VEGETABLES:

1 BUNCH LEAFY GREENS SUCH AS:
CHARD, KALE, SPINACH, COLLARDS

8-10 CUPS VEGETABLE STOCK

5 TOMATOES - FRESH OR CANNED
DEPENDING ON THE SEASON



SALT AND PEPPER TO TASTE



1) IN A LARGE SOUP POT HEAT THE OLIVE OIL OVER MEDIUM HEAT. PEEL AND CHOP THE ONION AND THE CARROTS. CHOP THE CELERY. PEEL AND MINCE THE GARLIC. CHOP THE LEAVES OF THE HERBS. (SAVE ALL THE PEELS, STEMS AND TRIMMINGS FOR THE VEGETABLE STOCK.) ADD THE AROMATICS TO THE OLIVE OIL AND SAUTE FOR FIVE MINUTES.

2) PEEL AND CHOP THE CRUNCHY VEGETABLES AND THEM TO THE SOUP POT. (AGAIN SAVE ALL THE PEELS, PULP AND SEEDS FOR THE VEGETABLE STOCK.)

3) ADD THE STOCK AND TOMATOES AND SIMMER FOR 5-10 MINUTES, TILL VEGETABLES ARE TENDER.

4) CHOP THE LEAFY GREENS AND ADD THEM TO THE SOUP POT. SEASON WITH SALT AND PEPPER. SHARE WITH FRIENDS AND FAMILY!



Frittata

Summary

In this sixth-grade humanities lesson, students make frittata. They practice their knife skills and safety, and practice using kitchen systems.

Objectives

After this lesson, students will be able to:

- ▶ Read and follow a basic recipe, and understand that some recipes are flexible and some are specific.
 - ▶ Practice basic knife skills while demonstrating proper knife safety and care.
 - ▶ Describe and apply the concept of cooking rate when preparing a dish with a variety of ingredients.
-

Assessments

During this lesson, students will:

- ▶ Use a written recipe as a guideline to prepare and season a frittata to taste.
 - ▶ Review basic knife skills and safety guidelines, and slice, dice, chop, and mince a variety of vegetables and herbs for the frittata.
 - ▶ Decide what order to add the frittata ingredients to the skillet based on their cooking rates.
-

Materials

FOR THE CHEF MEETING

- Frittata recipe
- Ingredients and tools for demonstration
- Visual aid

INGREDIENTS

- Olive oil
- Eggs
- Water
- Cheese
- Mix of seasonal vegetables
- Assorted fresh herbs
- Salt
- Pepper

TOOLS

- Cast-iron skillet
- Wooden spoons
- Mixing bowls
- Whisks
- Graters
- Chef's knives
- Paring knives
- Cutting boards
- Measuring cups
- Measuring spoons

EQUIPMENT

- Stove
- Oven

BEFORE YOU BEGIN

- Collect all the ingredients and tools and distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Gather supplies for the Closing.
- Create the visual aid.
- Copy the frittata recipes to hand out.
- Steam potatoes (if using in frittata).

Procedures

1**AT THE CHEF MEETING**

1. Welcome students back to the kitchen and introduce the recipe for the day: frittata.
2. Remind students that the 4B's (Be Respectful, Be Responsible, Be Safe, Be an Ally) still apply in the kitchen classroom.
3. Review basic knife skills and safety with a demonstration: Go through the process of chopping a carrot (or other vegetable), intentionally making mistakes as you go. Stop frequently to ask for students' thumbs up or down depending on whether they think your actions are safe or not. If not, ask them to give you tips about how to make them safer. Review using a cutting board, using a claw grip to protect your fingers, wiping the blade of the knife with a bench scraper and not your fingers, wiping the knife down with a damp cloth at the table, and how to carry a knife safely if you have to walk somewhere with it.
4. Explain that a frittata is a baked omelette that contains lots of vegetables and cheese, similar to a quiche without crust. Explain that to make the frittata students will first prep all the vegetables on the platter by cutting them into small pieces, grate the cheese, and whisk the eggs. Then they will sauté the vegetables on the stove until they are mostly cooked, pour in the eggs, and cook them almost like scrambled eggs until they are half done. They will finish cooking the frittata in the oven, which allows the eggs to stay light and fluffy. We'll be eating the frittata in slices, like a pie.
5. Ask students if there are any more questions.
6. Ask students to wash their hands and join their table groups.

2**AT THE TABLE**

1. Small-group check-in: What is your favorite way to eat eggs? What is one of your favorite breakfast foods?
2. Introduce the jobs and demonstrate how to prepare the ingredients on the platter. Review how to mince.
3. Explain that we'll be cutting the vegetables into fairly small pieces so that we get a

little bit in each bite of the frittata. Review the concept of cooking rates, explaining that we'll be adding the garlic and onion to the pan first to build flavor, the crunchy vegetables next so they have time to cook, and the leafy vegetables last.

4. Divide students into cooking jobs.
5. Prepare the recipe and set the table.
6. Eat.
7. Clean up.

3 AT THE CLOSING CIRCLE

1. Ask students to use their fingers to rate the food on a scale of 1 to 5. If there is time, ask students to brainstorm different ingredients they would add to the frittata if they were to cook it at home.

Teaching Notes

Eggs: The recipe calls for 8 to 20 eggs. When making this recipe with a class, we always use 8 eggs because it cooks a little bit faster.

What's a frittata? For students who are unfamiliar with frittatas, we describe them as a baked omelette, or like a quiche without crust.

Cheese inside and on top: We encourage students to put some of the cheese in the egg mixture and reserve some to sprinkle on top before putting the frittata in the oven.

Cracking an egg: We like to demonstrate how to crack an egg while the students are working. Most students know how, but for the few who are unfamiliar with the skill, it can feel embarrassing and vulnerable to admit that to their groupmates.

Raw egg: Show students how to work next to the compost bucket while cracking the eggs so they don't drip raw egg everywhere.

Eggs and cheese: Some students can be hesitant about the combination at first, but even those who profess to hate eggs and cheese together tend to love the frittata.

Cooking rates: The recipe says to add the vegetables and herbs at the same time, but this is a good lesson to prompt students to recall the idea of cooking rates and add them to the pan at different times (aromatics, then crunchy, then leafy).

Hot sauce diversity: We made multiple hot sauces available to our students during this lesson (Crystal, Tapatío, Cholula, Sriracha). Students often identified very strongly with one or two hot sauces and were very happy to see their own hot sauce because it was an opportunity for them to see their culture represented in the space.

Onions: We used spring onion instead of bulb onion for this lesson because it is less irritating to the eyes. When cooking frittatas with seventh and eighth graders, we generally use bulb onions, but for sixth graders, spring onions are a better choice in our experience.

Allergies: For students who are allergic to dairy, we reserve all the cheese to sprinkle on top and leave a piece of the frittata cheese-free. For students who are allergic to eggs, we always provide an alternative such as fruit, cheese, or toast.

Browning: This lesson is a good opportunity to show students how a little bit of browning on the bottom of the pan can add a lot of flavor.

Herbs: We use a variety of herbs in this lesson so that students can taste them and choose which to include in their frittata. Encourage students to use all their senses when choosing the herbs.

Fairness: Sometimes students become anxious when we start cutting the frittata for serving. We find it helps to name that you're trying to slice the frittata as evenly as you can and that it is very difficult to make it perfect, so please be understanding of that.

Testing for doneness: You know the frittata is done when the egg looks solid and doesn't shake when you shake the pan.

Return and review: This is the first time back in the kitchen for the sixth graders after the fall rotation. We chose this recipe specifically for this lesson because it is an excellent opportunity to review knife skills, safety, and kitchen systems.

Board to pan technique: We show students how to add vegetables from their cutting boards to the pan so that their boards don't flip and vegetables don't fall on the floor or counter.

Cleaning practice: Because this is the first time the sixth graders are in the kitchen after their fall rotation, we like to review standards of cleanliness and hygiene. We make it more fun and increase student engagement by having them rate the cleanliness of the cooking station and toolboxes after cooking using their fingers. We use the scale of 1 to 4, because it mirrors the grading system they use in their academic classes and we find that doing so increases their buy-in and sense of importance around the assessment. After they rate the cleanliness, we talk a little bit about what we see that has been cleaned well and what could be improved.

Frittata for everyone: This year we made frittatas with the seventh and eighth graders as well as the sixth graders. With seventh and eighth graders, we made the lesson more challenging by adding salads.

Vocabulary

- ▶ Sauté
- ▶ Grate
- ▶ Whisk
- ▶ Cast-iron skillet
- ▶ Cooking rate

Connections to Standards

CALIFORNIA STATE COMMON CORE, READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS

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

RST 6-8.10. By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN, GRADE 6:

Techniques 2.6 Read and follow the recipe, and understand that some recipes are flexible and some are specific

Techniques 2.7 Taste ingredients and discuss sensory observations using descriptive vocabulary

Concepts 3.8 Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole

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.

Frittata

CHOP



COOK

on the stove

BAKE

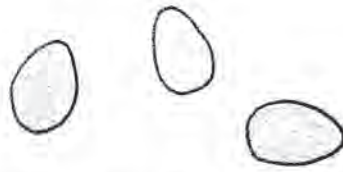
in the oven!

WHISK

SAUTÉE



Frittata



8-10 eggs

2-3 cups assorted fresh vegetables and herbs

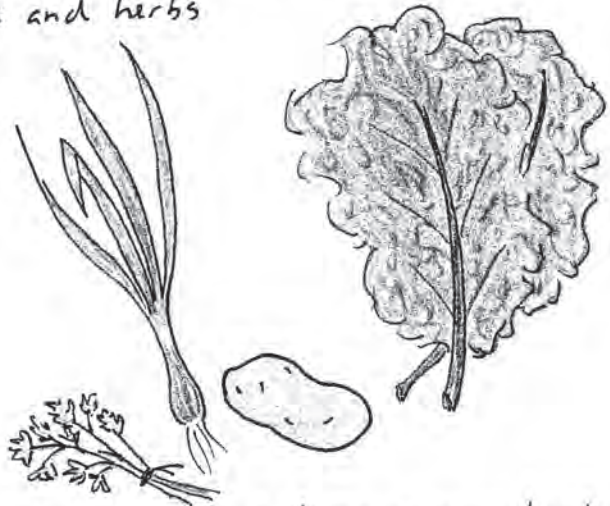
1/2 cup grated cheese

2 tablespoons water

1 1/2 teaspoons salt

1/2 teaspoon fresh ground pepper

2 tablespoons olive oil



Preheat the oven to 375°. Crack the eggs into a large mixing bowl and whisk just to blend. Set aside.

Wash and roughly chop the vegetables and herbs. Add 1/4 cup (half) the cheese, the water, and the salt and pepper to the eggs, stir to blend. In a large cast iron skillet, heat the olive oil over medium heat. Add the vegetables and herbs and cook until they are tender but not completely cooked. Pour the egg mixture over the vegetables and herbs, stir to blend. Heat until the eggs are half cooked. Do Not Overcook as the frittata will finish cooking in the oven. With the back of a spoon, smooth the top of the frittata and top with the remaining cheese. Transfer the skillet to the preheated oven and bake for about 15 minutes, until the frittata is puffy and golden brown. Remove the frittata from the oven and let it cool for a few minutes before slicing into wedges, like a pie.

The Silk Road: Chinese Steamed Dumplings

Summary

In this sixth-grade humanities lesson, students prepare Steamed Dumplings as they study the exchange of ideas, goods, and foods between China and other regions during the Han dynasty. This is the first of four Silk Road lessons.

Objectives

After this lesson, students will be able to:

- ▶ Cite examples of China's contributions to the Silk Road.
 - ▶ Identify geographic features that isolated China before the Han Dynasty.
 - ▶ Explain why certain items were valuable for trade along the Silk Road.
-

Assessments

During this lesson, students will:

- ▶ Name ideas, goods, and foods from China that were traded along the Silk Road
 - ▶ Name a geographic features that isolated China before the Han Dynasty
-

Materials

FOR THE CHEF MEETING

- Steamed Dumplings recipe
- Dipping Sauce recipe
- Piece of silk
- Ingredients and tools for demonstration
- Visual aid

INGREDIENTS

FOR THE STEAMED DUMPLINGS

- | | |
|---|---|
| <input checked="" type="checkbox"/> Extra-firm tofu | <input checked="" type="checkbox"/> Sesame oil |
| <input checked="" type="checkbox"/> Carrots | <input checked="" type="checkbox"/> Salt |
| <input checked="" type="checkbox"/> Napa or Savoy cabbage | <input checked="" type="checkbox"/> Fresh ginger |
| <input checked="" type="checkbox"/> Scallions | <input checked="" type="checkbox"/> Garlic (optional) |
| <input checked="" type="checkbox"/> Cilantro | <input checked="" type="checkbox"/> Pepper |
| <input checked="" type="checkbox"/> Soy sauce | <input checked="" type="checkbox"/> Small wonton wrappers |
| <input checked="" type="checkbox"/> Hoisin sauce | |

FOR THE DIPPING SAUCE

- Soy sauce
- Black vinegar
- Sesame oil
- Sambal oelek (chili sauce)

TOOLS

- Wok
- Bamboo steamers
- Mixing bowl
- Grater
- Cutting boards
- Vegetable peeler
- Chef's knives

EQUIPMENT

- Stove

PREPARATION BEFORE YOU BEGIN

- Collect all the tools and ingredients, and then distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Create the visual aid.
- Copy the Steamed Dumplings recipe to hand out.
- Copy the Dipping Sauce recipe to hand out.
- Press the tofu to remove excess moisture.

Procedures

1 AT THE CHEF MEETING

1. Today we are starting a four-lesson series in which we'll be talking about the Silk Road. Could someone help us out—what do I mean when I say the “Silk Road”? What do you know about the Silk Road already?
2. The Silk Road was an ancient trading route that stretched 4,000 miles, all the way from China to Rome. It started more than 2,000 years ago, and lasted for almost 1,000 years. It existed in a time before trains, planes, cars, phones, computers, and email, so the goods, religions, ideas, and food traded along the Silk Road were all carried by foot or animal. Over the next four lessons, we'll be traveling along the Silk Road—from China, to northern India, to Rome—and cooking foods that originated in each of those regions. Today I'm going to tell you a story about how the Silk Road started in China. Part of this story is also how the dumpling made it to China—because believe it or not, the dumpling was not always. The beginning of our story takes us back 2,000 years ago, to around 150 BC in Imperial China.
3. Tell the story of how the Silk Road began in China. This story involves three groups of people—the Chinese, Xiongnu, and Yuezhi—and begins more than 2,000 years ago, in 198 BC. Back at this time, the Chinese Empire was geographically isolated by the Pacific Ocean to the east, the Himalayan, Kunlun, and Karakoram mountains to the west, and the Taklimakan and Gobi deserts to the northwest. The Chinese only had extensive contact with one group: the Xiongnu (now known as the Huns). The

Chinese and Xiongnu had territorial conflicts in modern-day northern China. In 198 BC, Chinese Emperor Gaozu gave his daughter to the Xiongnu and began to pay an annual gift in gold and silk to make a treaty. But the treaty wasn't honored and the attacks on the northern border continued. The Chinese launched an attack on the Xiongnu but lost miserably. In 138 BC, Emperor Wudi sent Zhang Qian and an envoy of 100 men to try to make an alliance with the Yuezhi people. They got captured by the Xiongnu and were held for 10 years, but eventually escaped and made it to northern India, where they found the Yuezhi. The Yuezhi (now the Kushan) refused to ally with the Chinese against the Xiongnu. They were not interested in revenge and had become trading people. They wanted to maintain peace. On their way back to China, Zhang Qian and his men saw "heavenly horses" native to Central Asia. They wanted to obtain these horses because they believed that these huge horses would strengthen their army so that they could face the Xiongnu.

4. Prompt students to reference the visual aid: What were some items the Chinese might have traded for these horses? What made silk especially valuable as a trading item? (It was lightweight, packable, couldn't break, and only the Chinese knew how to make it.)
5. They exchanged a variety of goods for the horses (silk was the most valuable and sought-after), built up their army, and eventually secured their northern border, ensuring safe passage along the Gansu Corridor for continued trade—this was the beginning of the Silk Road.
6. Dumplings were originally a food developed by the Xiongnu and other nomadic people of Central Asia. Their importance in Chinese culture is evidence of the cultural exchanges that occurred even between peoples at war. Today we are making a Chinese version of the dumpling, with tofu, vegetables, soy sauce, and hoisin sauce.
7. Next lesson we'll be continuing this story, moving west to northern India, and looking at the history of the Silk Road there.
8. Are there any questions?
9. Wash your hands and split up into your table groups.

2

AT THE TABLE

1. Small-group check-in: What is your favorite food to eat that is wrapped, or that has an inside and an outside (e.g., dumplings, empanadas, ravioli, enchiladas, pork buns)?
2. Explain that class will happen in two parts: First we'll prepare the dumpling filling, then we'll come back together to clear the table and wrap the dumplings.
3. Introduce the filling jobs and emphasize that all the ingredients should be cut, grated, or minced into very small pieces.
4. Divide students into cooking jobs.
5. Prepare the filling, wrap the dumplings, and set the table.
6. Eat.
7. Clean up.

1. Ask students to use their fingers to rate the recipe on a scale of 1 to 5. If there is time, ask students what item from China they would be most excited to trade for on the Silk Road.

Teaching Notes

Narrative-style Chef Meeting: We treat this Chef Meeting like a story. We find that presenting the information in a narrative style engages the students deeply in Silk Road history and sets them up well to be curious about “what comes next” for their next three lessons. It differs from most of our other Chef Meetings in that there is a greater amount of teacher talk time and we don’t emphasize direct student participation as much. Dramatic, engaging storytelling is very important to make this lesson a success—but when it is, it often has the students on the edges of their seats in rapt attention the way only a good story can.

Two-part lesson: We teach the cooking portion of this lesson in two parts. First, all the students work on preparing the filling. Then we clear off the table, demonstrate how to wrap a dumpling, and everyone wraps the dumplings together. When we’re introducing the jobs, we explain that the first part of the lesson (making the filling) should happen fairly quickly so that we have enough time to wrap, cook, and eat the dumplings.

Shredding the cabbage: We like to shred the cabbage ahead of time for our students. We have found that it is difficult for them to shred it finely enough to cook fully in the short time it takes the dumplings to cook.

Flexible recipe: The filling in this recipe is quite flexible. Add more vegetables if you need more work or eliminate some if you need less. We often add one or two cloves of garlic because it’s a delicious addition and students love to practice mincing.

Dumpling skins: We buy our dumpling skins premade (often found in the freezer section or next to the tofu). We like to get a combination of square and round skins because students like to experiment with both shapes. If you make the skins from scratch, note that the dough needs to rest 30 minutes to two hours, or in the fridge overnight. Rolling the skins thin enough for steaming can be challenging.

Ginger: The ginger should be prepared in very small pieces. If mincing, show students how to peel the ginger with a spoon. If using a microplane grater, there’s no need to peel before grating.

Tasting the Dipping Sauce: Some of our students discovered that when they were tasting the Dipping Sauce, the sesame oil coated their fingers or spoons so that it was all they could taste. All the flavors will be present when served with the dumplings.

Seasoning the filling: We put the soy sauce, hoisin sauce, sesame oil, salt, and pepper on a separate table (the Spice Table in our Kitchen Classroom) so that students can have convenient access to measure all these ingredients. We highlight these ingredients on a copy of the recipe and hang it above the Spice Table so students can be independent.

Setting the table up to wrap the dumplings: We have three groups of 8 to 12 students in our kitchen classes. Each group has its own table. To set up the tables for wrapping the dumplings, each table gets: two or three bowls of prepared filling with 8 to 12 spoons distributed evenly between the filling bowls; three small bowls filled with an inch of water; a pile of spinach at each end of the table; a steamer basket at each end of the table. Setting the table up this way means everyone can reach what they need to wrap dumplings.

Steaming with spinach: We layer the bottom of the bamboo steamers with spinach before putting in the raw dumplings to prevent sticking and tears.

Who has made dumplings before? When we demonstrate how to wrap a dumpling, we always ask this question in order to acknowledge the experience and expertise many of our students bring to this lesson. Dumplings are a culturally significant food for many students, and many are able to share cultural variations on the recipe that we use. We explicitly name that there are a million ways to make a dumpling and that the way we are doing it in class is just one.

Dumpling overfill: This is essentially the only pitfall. Don't put too much filling in or the dumpling won't close!

Cornstarch: The cornstarch coating on the store-bought dumpling skins keeps the skins separate when dry, but makes them stick when wet. Our students often find this paradox amusing.

Creative dumpling wrapping: Emphasize that there is no one way to wrap a dumpling. Encourage students to investigate how many ways they can find to wrap theirs, and encourage them to learn from one another.

Collective dumpling wealth: We make sure to explicitly state that students will not necessarily be eating the dumplings that they personally wrap.

Extra filling: Serve any filling you don't use as a raw side to the cooked dumplings.

Cooking the dumplings: Dumplings can be boiled, pan-fried, or steamed. If steaming, you can use any kind of steamer (bamboo or metal). We use bamboo steamers. In order to cook the dumplings evenly we rotate the trays from top to bottom while cooking.

Extra dumplings and skins: Dumplings and dumpling skins freeze really well.

Chili oil: We eat our dumplings with Dipping Sauce made by the students and chili oil that we make ahead of time (find a recipe here: <http://thewoksoflife.com/2014/08/sichuan-chicken-chili-oil-sauce-kou-shui-ji/>).

Eating with chopsticks: Not everyone at the table will know how to use chopsticks. Sometimes this causes anxiety or embarrassment. Sometimes it leads students to deride or mock chopsticks as eating utensils. Preempt this by encouraging students who know how to use chopsticks to teach students who don't.

Etiquette and norms around chopsticks use: Invite students to share the etiquette or norms they have or know of around chopsticks.

Chopstick challenge: If you have extra time, it can be fun to put a variety of small items (beans, leaves, and other trinkets) on a plate and time how quickly students can move all the items from one plate to another.

Chopstick drumming: We always ask students not to drum with chopsticks because it is loud and can feel disrespectful for those for whom chopsticks are a standard eating utensil.

Dessert dumpling challenge: A fun challenge for conversation at the table is to prompt students to imagine delicious dessert dumpling recipes.

Meat dumplings: Replace pork for tofu and knead the pork with some salt first.

Vocabulary

- ▶ Silk Road
 - ▶ Geographically isolated
 - ▶ Gansu Corridor
 - ▶ Xiongnu
 - ▶ Cultural exchange
 - ▶ Dumpling
 - ▶ Steamer
 - ▶ Wok
-

☑ Connections to Standards

CALIFORNIA STATE, HISTORY–SOCIAL SCIENCE, GRADE 6

- 6.6.2** Explain the geographic features of China that made governance and the spread of ideas and goods difficult and served to isolate the country from the rest of the world.
- 6.6.7** Cite the significance of the trans-Eurasian “silk roads” in the period of the Han Dynasty and Roman Empire and their locations.

COMMON CORE, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 6

- SL.6.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others’ ideas and expressing their own clearly.

EDIBLE SCHOOLYARD IN THE KITCHEN, TOOLS, GRADE 6

- 6.1** Identify and name basic tools and equipment.

EDIBLE SCHOOLYARD IN THE KITCHEN, TERMS AND TECHNIQUES, GRADE 6

- 6.1** Use basic cooking terms and techniques.
-

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.

CHINA AND THE Silk Road

Where the Silk Road BEGINS!



WHAT CHINA GAVE:



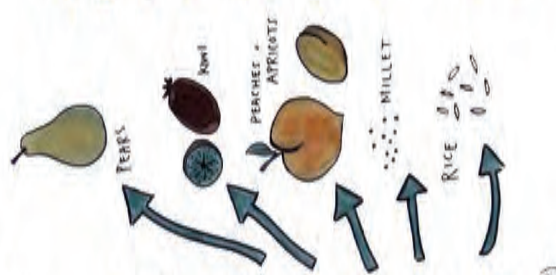
IDEAS

(TECHNOLOGY, PHILOSOPHY, RELIGION)

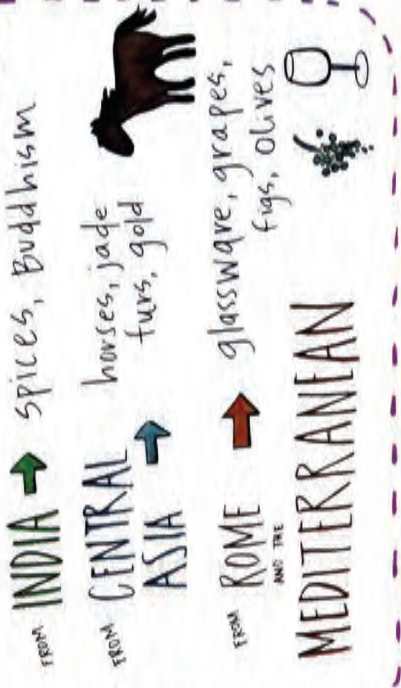


FOOD

(yum)



WHAT CHINA GOT:





Steamed Dumplings



1/2 pound firm tofu
1 cup grated carrot



1/2 cup shredded Napa Cabbage
2 tablespoons finely minced scallion
1 tablespoon minced cilantro
1 tablespoon soy sauce
1 tablespoon hoisin sauce

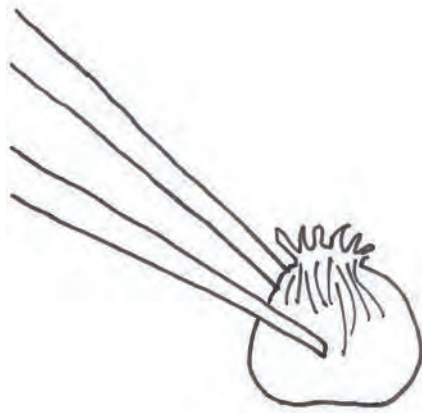


2 teaspoons sesame oil
1 teaspoon kosher salt
2 teaspoons peeled, minced ginger
1/4 teaspoon freshly ground pepper
1 package small won ton wrappers
1 small bowl water
optional: fresh banana leaves

Drain the tofu and press dry with paper towels. Mash tofu with a fork and place in a medium sized mixing bowl. Add the grated carrot, shredded cabbage, scallion, cilantro, soy sauce, hoisin sauce, sesame oil, salt, minced ginger and pepper, mixing well.

Remove a won ton wrapper from the package and brush the edges of the wrapper with water. Place 1 teaspoon filling in the center of the wrapper, gather up the edges and pinch to seal the dumpling.

Using the steamer of your choice bring 1 inch of water to a simmer. Place the dumplings in the steamer using a small square of banana leaf underneath it to prevent sticking. Make sure the dumplings are not touching or they will stick together. Steam the dumplings, covered, for 8-10 minutes - until wrappers are transparent. Serve with dipping sauce.. (simple dipping sauce is equal parts soy sauce and rice vinegar.)



Dipping Sauce



- 4 TABLESPOONS SOY SAUCE
- 2 TABLESPOONS BLACK VINEGAR
(OR RICE VINEGAR)
- 2 TEASPOONS SESAME OIL
- 2 TEASPOONS SAMBAL OLEK
(CHILI SAUCE)

COMBINE ALL INGREDIENTS IN A
SMALL BOWL, STIRRING GENTLY.
SERVE WITH STEAMED DUMPLINGS.

The Silk Road: Indian Vegetable Curry

Summary

In this sixth-grade humanities lesson, students prepare Vegetable Curry as they study the ideas, goods, and foods that India shared with other regions along the Silk Road. This is the second of four Silk Road lessons.

Objectives

After this lesson, students will be able to:

- ▶ Cite examples of India’s contributions to the Silk Road.
 - ▶ Describe how religions in general, and Buddhism in particular, spread along the Silk Road.
 - ▶ Identify ingredients and practice tasting the results of the recipe.
-

Assessments

During this lesson, students will:

- ▶ Name ideas, goods, and foods from India that were traded along the Silk Road.
 - ▶ Identify Buddhism as a religion that spread from India to China along the Silk Road and describe how the local culture and geography of each place impacted the depictions of Buddha.
 - ▶ Measure, toast, grind, and combine spices for the Vegetable Curry and taste and season the dish according to their preferences.
-

Materials

FOR THE CHEF MEETING

- Vegetable Curry recipe
- Curry Spice Mix recipe
- Ingredients and tools for demonstration
- Visual aid

INGREDIENTS

- Basmati rice

FOR THE CURRY SPICE MIX

- Coriander seeds
- Cardamom pods
- Mustard seeds
- Black peppercorns
- Cumin seeds
- Chili flakes
- Ground turmeric

FOR THE VEGETABLE CURRY

- Vegetable oil
- Onions
- Garlic
- Ginger
- Curry Spice Mix
- Curry leaves (optional)
- Carrots
- Cauliflower
- Potatoes
- Kohlrabi or other seasonal vegetables (optional)
- Garbanzo beans
- Coconut milk
- Cilantro (optional)
- Salt

TOOLS

- Cast-iron skillet
- Heavy-bottomed pot
- Vegetable peeler
- Mortar and pestle
- Wooden spoon
- Chef's knives
- Paring knives
- Cutting boards
- Measuring beaker
- Measuring cups
- Measuring spoons

EQUIPMENT

- Stove

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.
- Copy the Curry Spice Mix recipe to hand out.
- Copy the Vegetable Curry recipe to hand out.
- Cook the rice.
- Cook the garbanzo beans.

Procedures

1 AT THE CHEF MEETING

1. Welcome students and introduce the lesson for the day: making vegetable curry and learning about India's contributions to the Silk Road. We will be traveling to the city of Kashgar, an oasis town on the western edge of the Taklimakan Desert. Though Kashgar isn't technically in India, it was a central meeting place for the three main regions of the Silk Road: China, India, and Rome. Many of the items that were traded from India along the Silk Road passed through Kashgar, including a variety of religions that spread along the Silk Road.
2. During the time of the Silk Road, Kashgar was one of if not the greatest market city in the world. Imagine arriving from a months-long journey through deserts, over mountains, and across treacherous terrain to a city bustling with activity. At its peak, caravans of more than a thousand camels or yaks arrived each day carrying silk, spices, gold, gemstones, and people from every part of the world. There was not a greater mixing pot of people and cultures than Kashgar. Walking through the streets, you would see goods from all over the world and hear more languages spoken than any other place on Earth at the time.
3. Prompt students to imagine they are walking through a Kashgar market. Ask them to recall goods traded from China along the Silk Road. What are some of the things they might see being traded from China? What about from India? Encourage students to use the visual aid to do some "research."

4. Explain that with such a diverse mix of people, much more than goods were traded—new ideas also proliferated along the Silk Road. Ask students to use the visual aid to give an example of a big idea that came from India: Buddhism.
5. Explain that many religions spread along the Silk Road (including Zoroastrianism, Manichaeism, Buddhism, and, later, Christianity and Islam). This was partly because of the diversity of people who traveled the road. At a time when most people lived their entire lives within the same small village or town, people with new ideas were often drawn to Silk Road trade routes or cities like Kashgar where they were less likely to face persecution for being different.
6. The Silk Road also offered an ideal place for missionaries to make a living. Travelers along the often-treacherous routes (the land just outside Kashgar towards China was known as the “Trail of Bones” because so many travelers lost their lives there) were well known to take out “insurance” against whatever misfortune might befall them by donating to whatever religious person or group they might encounter. Buddhists especially proliferated along the Silk Road, where the fact that they were willing to live isolated and simple lives allowed them to be happy living with less. They set up temples and way houses where many travelers stayed the night in return for a small payment, and often left with a new religion.
7. As religions spread, they often changed according to the unique cultures of the people that practiced them. This is reflected in the difference in appearance between the Indian and Chinese buddhas. What differences do you notice between these two buddha depictions?
8. The Indian buddha represents Siddhartha, the rich young prince who renounced his birthright as ruler to travel throughout India on the search for enlightenment. On his journey, he almost starved to death before encountering “the middle road,” a way of living that involved neither deprivation or excess. The Chinese buddha is one of many Chinese buddha depictions, and likely is modeled after an overweight friendly zen monk or healer that traveled the Chinese countryside in 950 AD helping people.
9. Today we are making vegetable curry. This food is another example of something that spread throughout Asia during this time but was greatly influenced by the local cultures of the places that adopted it. There are different types of curry all over Asia that use different combinations of spices. Today we are making a version of curry representative of one that might be made in southern India, with coconut, mustard seeds, and curry leaves.
10. Ask students to wash their hands and go to their table groups.

2

AT THE TABLE

1. Small-group check-in: What item would you want to trade for from India?
2. Review the recipe and explain that just like with the Autumn Harvest Soup lesson, today we'll be using the concept of cooking rates to decide what order our ingredients get added to the curry as we cook. We'll start with the “aromatics” or “flavor base”—in

this case our masala paste—then add the crunchy vegetables, and then the leafy ones.

3. Divide students into cooking jobs.
4. Prepare the recipe.
5. Set the table; eat; clean up.

3

AT THE CLOSING CIRCLE

1. Ask students to use their fingers to rate the recipe on a scale of 1 to 5. If there is time, ask students to brainstorm foods that are found in many places in the world but vary according to local culture or ingredients.

Teaching Notes

“Spiced” vs. “Spicy”: When they learn we’re cooking with spices, some students are nervous that the curry will be too spicy for them. We’re careful to make the distinction between a dish that is highly “spiced” and one that is “spicy.” This is not a spicy curry.

Masala paste: The ground-up blend of curry powder, garlic, and ginger is called “masala paste” and serves as the flavor base for this recipe. Preparing the ingredients this way is fun (students love to use the mortar and pestle) and helps to intensify the curry flavor. If you’re in a rush or don’t have a mortar and pestle, you may mince the garlic and ginger and skip grinding them together with the dry spices—just add them all to the pot when you would the masala paste.

Curry leaves: Curry leaves are the aromatic leaves of the curry tree, native to subtropical areas of India and South Asia. They are optional in this recipe, but highly recommended if you can find them. They freeze well and may be used directly out of the freezer as if they are fresh.

Kohlrabi: We used kohlrabi when we taught this lesson and students loved it! They were very excited to try a novel vegetable. We often described it as like a cross between an apple and a broccoli stem, which tended to promote buy-in.

Paying it forward: Each class uses curry powder made by previous classes to prepare their curry and makes a batch of fresh curry powder for the following class in this lesson. We do this because it helps to streamline the process time-wise. We always share this information at the beginning of class so that students are prepared to part with the curry powder that they personally grind.

Curry powder: We make our own curry powder from scratch because it is fun (students love using the mortar and pestle to grind the spices) and results in a more vibrant flavor. This recipe is also delicious with store-bought curry powder. We tell our students this because many of them may not have access to a wide variety of spices at home.

Toasting the spices: Toast the spices just until the mustard seeds begin to pop and the cumin seeds begin to get darker. Be careful not to toast too long to avoid an acrid, or burnt, taste.

Grinding the spices: It is easier to grind the whole spices to a fine powder if you wait until after the whole spices are fully ground to add the turmeric and chile flakes to the mortar and pestle.

Making extra curry powder: Our curry powder recipe makes more than enough for students to take the extra home in small envelopes. We like to do this because many students may not have access to a wide variety of spices at home.

Other uses for curry powder: This curry powder is delicious on popcorn, roasted nuts and seeds, or roasted vegetables.

Preventing burning: This curry tastes best when the masala paste has been thoroughly fried in oil. That makes this lesson an excellent opportunity to show students how to deglaze the pan with water to scrape up bits of flavor that get stuck to the bottom and prevent burning.

“No thank you” portions: Some of our students were hesitant about trying this recipe because it was unfamiliar to them and highly flavored. We always serve them very small “no thank you” portions so that they have the opportunity to take a small taste if they want to. Almost without fail, every student that tried a small taste came back for a full serving.

Vocabulary

- ▶ Curry
- ▶ Buddhism
- ▶ Masala
- ▶ Toast (spices)
- ▶ Bloom (spices)

Connections to Standards

CALIFORNIA STATE, HISTORY–SOCIAL SCIENCE, GRADE 6

- 6.6.7** Cite the significance of the trans-Eurasian “silk roads” in the period of the Han Dynasty and Roman Empire and their locations.

COMMON CORE, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 6

- SL.6.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others’ ideas and expressing their own clearly.

EDIBLE SCHOOLYARD IN THE KITCHEN, TOOLS, GRADE 6

- 6.1** Identify and name basic tools and equipment.

EDIBLE SCHOOLYARD IN THE KITCHEN, TERMS AND TECHNIQUES, GRADE 6

- 6.1** Use basic cooking terms and techniques.

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.

URL

Read about this lesson in the ESY Berkeley Journal.

<http://edibleschoolyard.org/esy-berkeley-journal/2010/03/13/vegetable-curry>

Resources

- Silk_Road_2_Vegetable_Curry_Visual_Aid
- Vegetable_Curry_Recipe
- Curry_Spice_Mix_Recipe

India

WHAT INDIA GAVE:



INDIAN BUDDHA

CHINESE BUDDHA

IDEAS

GOODS



COTTON

IVORY

PEARLS



MANGO



CORIANDER



TURMERIC



CUCUMBER



EGGPLANT



GINGER



CARDAMOM



CUMIN

FOODS

AND THE Silk Road



THE WESTERN Silk Road: **KASHGAR**

connected KASHGAR to ROME and EGYPT

By going over the



PAMIR MOUNTAINS

through CENTRAL ASIA, PERSIA,

MESOPOTAMIA and the

SYRIAN DESERT to the

MEDITERRANEAN SEA

to ROME



KASHGAR

WHERE EAST MEETS WEST

THE EASTERN Silk Road

connected KASHGAR to LUOYANG (CHINA'S CAPITAL CITY)

through the TAKLIMAKAN



DESERT

★ Merchants carts

were searched before being

allowed OUT of CHINA

to prevent ~~SMUGGLING~~ SILKWORM

SMUGGLING



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 (1 can) coconut milk
- 4 cups vegetable stock
- 1 bunch greens - washed, destemmed and chopped
- salt and pepper to taste





Heat the olive oil in a large pot and add the diced onions and curry spice mix. Sauté 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 and season with salt and freshly ground pepper. Serve over basmati rice.


- Options:
- If you like more curry flavor you may add more of the curry spice mix as the curry is simmering.
 - Feel free to use other vegetables that are in season. Cauliflower, squash, peas, pumpkin, beets, turnips or parsnips are all wonderful additions.


Curry Spice Mix


2 tablespoons coriander seeds 


8 cardamom pods 

2 tablespoons mustard seeds 

$\frac{1}{2}$ teaspoon black peppercorns 

2 tablespoons cumin seeds 

1 teaspoon chili flakes 

2 tablespoons ground turmeric 

In a medium hot skillet (dry - no oil) toast the coriander, cardamom, mustard seeds, peppercorns and cumin till fragrant - about 1 minute. Combine the toasted spices in a mortar and pestle, add the chili flakes and turmeric and grind to a powder. Makes approximately $\frac{1}{2}$ cup.

The Silk Road: Roman Homemade Hand- Rolled Pasta with Gremolata

Summary

In this sixth-grade humanities lesson, students prepare fresh pasta with gremolata as they study the exchange of ideas, goods, and foods between Rome and other regions along the Silk Road. This is the third of four Silk Road lessons.

Objectives

After this lesson, students will be able to:

- ▶ Cite examples of Rome's contributions to the Silk Road.
 - ▶ Make connections between the diets of historic cultures and foods we eat today.
 - ▶ Understand how cooking process impacts the resulting product.
-

Assessments

During this lesson, students will:

- ▶ Answer questions about the spread of Roman ideas, goods, and food along the Silk Road.
 - ▶ Learn that noodles and pasta were important foods in ancient Rome and China, and will describe their favorite way to eat noodles or pasta.
 - ▶ Carefully follow a precise process to make handmade noodles from scratch, and compare the taste and consistency of the handmade noodles with store-bought pasta.
-

Materials

FOR THE CHEF MEETING

- Homemade Hand-Rolled Pasta recipe
- Gremolata recipe
- Ingredients and tools for demonstration
- Visual aid

INGREDIENTS

FOR THE HOMEMADE HAND-ROLLED PASTA

- Pasta flour
- Salt
- Eggs
- Olive oil

FOR THE GREMOLATA

- Italian parsley
- Garlic
- Lemon

TOOLS

- Stockpot
- Mixing bowl
- Zester
- Grater
- Crinkle cutter
- Spider strainer
- Pasta crimper
- Rolling pins
- Bench scraper
- Chef's knives
- Paring knives
- Cutting boards
- Measuring cups
- Measuring spoons
- Forks

EQUIPMENT

- Stove

BEFORE YOU BEGIN

- Collect all the tools and ingredients, and then distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Create the visual aid.
- Copy the Homemade Hand-Rolled Pasta recipe to hand out.
- Copy the Gremolata recipe to hand out.
- Prepare pasta dough (if possible, use dough made in an earlier class).

Procedures

1

AT THE CHEF MEETING

1. Welcome students and introduce Rome as the final stop on their Silk Road journey. Today we're going to learn how silk made it to Rome and almost made the Roman Empire go broke.
2. Remind students of the long trip through China and India, and ask for examples of important goods, ideas, and foods from each region that were traded on the Silk Road. Have students recall the foods they prepared in class when studying those regions.
3. Explain that Rome was one of the most powerful empires in the history of the Western world. It began in Italy and expanded to include most of Europe, North Africa, Egypt, and Syria over a period of 500 years. The Roman Empire became part of the Silk Road 200 years after China. And the Romans were absolutely crazy about silk.
4. Our story begins after the treaty between the Chinese and Xiongnu in 198 BC in which Emperor Gaozu gave his daughter to the Xiongnu and began to pay an annual

gift in gold and silk. Silk gradually made its way to Rome. The Xiongnu traded it to the Yuezhi, who traded it with the Parthians, who traded it with the Romans. The Romans were crazy for silk—it was a status symbol and everyone had to have it, even just a small patch to pin to their clothes. But after being traded by so many people, it was very expensive and it became a drain on the Empire.

5. Prompt students to use the visual aid: What were some of the goods traded by the Romans for silk?
6. The Romans started spending so much gold on silk that by 14 CE Emperor Tiberius actually introduced a ban on silk to try and rein in Roman spending. The Romans wanted to make silk themselves, but the Chinese carefully guarded the secret of how to make silk because it was a source of great wealth for their empire.
7. Buddhism was not the only religion to spread along the Silk Road; Christianity also came by way of missionaries from the Roman Empire (and Islam from the Middle East, though not until later). In 552 CE, two Assyrian Christian monks visited China, learned the secret of silk, and smuggled out silkworms and mulberry seeds in their walking sticks (Assyria was at this time a province of the Roman Empire). The Romans could then make their own silk, though it was never of the same quality as that made by the Chinese.
8. Today we are making Homemade Hand-Rolled Pasta with Gremolata. Noodles, like silk, originated in China and came to Italy by way of the Silk Road where they became very popular. Today we are making an Italian version of the Chinese-originated dish.
9. Review the recipes and demonstrate how to make the dough directly on the table or in a mixing bowl.
10. 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 noodles or pasta?
2. Review the recipes.
3. Divide into three working groups: The first group of students rolls, cuts, and cooks the pasta using previously prepared pasta dough. The second group of students prepares pasta dough for the following class. The third group of students grates cheese and prepares the gremolata.
4. Set the table; eat; clean up.

3 AT THE CLOSING CIRCLE

1. Ask students to use their fingers to rate the recipe on a scale of 1 to 5. If there is time, challenge students to refer to the foods depicted on the China, India, and Rome visual aids to brainstorm dishes they eat today that may have been traded along the Silk Road.

Teaching Notes

Boiling the water: Don't forget to set pots on to boil early so that the water can be at a rolling boil as soon as the pasta is ready to be cooked.

Dough: We made four batches of dough with each class of about 30 students (each of the three table groups made one batch, and we made a sample batch as part of the Chef Meeting at the beginning of class).

Pay it forward: This dough needs at least 20 minutes to rest and can rest overnight in the fridge (it rolls best when warm, so it is best to give it at least 15 minutes to warm up at room temperature if you keep it in the fridge). We use the pay-it-forward model by having each class make dough for the following class. We made four batches of dough before the first class in the rotation.

Flour: Every table should have its own container of flour to minimize mess and make more flour easily accessible to keep the dough from getting too sticky.

Science of pasta dough: We found that explaining the “why” behind the dough-making process helped our students to make more successful pasta. You let the dough rest so that it's not too tough and won't crack when you try to roll it out. The dough only has to rest 20 minutes, and beyond that, more resting doesn't considerably change the consistency. You mix the wet and dry ingredients together relatively slowly as opposed to dumping them all in a bowl at the same time in order to avoid big clumps and get the smoothest possible dough, but you don't have to mix so slowly that it's a grain of flour at a time.

Kneading: We reference the Pan de los Muertos lesson that the sixth graders did in the fall to remind them of kneading technique. We explain that you don't want the dough sticky, but you want to add as little flour as you can get away with to keep it from getting sticky. Your goal with kneading is to produce a smooth texture, so you don't want to tear the dough (you want to organize the proteins in the flour into a neat structure, which tearing disrupts. This highly organized protein structure is what yields the best texture for pasta).

Rolling the dough: The dough should be rolled very thin. This is most easily done if the recipe is portioned into at least four or more pieces as opposed to being rolled as one large piece.

Pass-it-on rolling technique: We generally break students into three groups to complete this recipe: making dough, rolling dough, and making gremolata. The dough makers and gremolata makers will likely finish in time to also have a turn to roll out and cut dough. Have students who rolled the first few pieces of dough teach the students who start later. Tell the first rollers that this will happen so they can practice perfecting their technique and plan how they'll teach their classmates.

Cutting the pasta: We cut our pasta with roller cutters, bench scrapers, or a knife on the cutting board. With roller cutters, it's important to press firmly and roll one way in order to get the cleanest cut. In terms of shape, there are a million ways to cut pasta and every single one is delicious. A favorite of our students is making bowties, by cutting out rectangles and then crimping the middles.

Zesting: We like to challenge students to try to keep the lemon the same shape, just turn it from yellow to white by removing just the zest and not the bitter pith.

Putting it all together: There are many ways to assemble the gremolata, cheese, olive oil, salt, and pasta for the final dish. We found the gremolata tastes best if you massage the parsley, lemon zest, and garlic with salt, then toss it with oiled pasta, then put cheese on top. Students also love to just throw little bits of each component into the bowl as the pasta comes out of the pot and assemble the dish little by little.

Dietary restrictions: We always keep gluten-free and vegan versions of the recipe on hand for students who may need them.

Vocabulary

- ▶ Cultural influence
 - ▶ Kneading
 - ▶ Gluten
 - ▶ Zesting
 - ▶ Status symbol
-

Contributors

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

Resources

- K6-8_Visual_Aid.pdf
- Homemade_Hand_Rolled_Pasta_Recipe.pdf
- Gremolata_Recipe.pdf

HOMEMADE, HAND ROLLED pasta

- 2 cups of flour
- 1 generous pinch of salt
- 4 eggs (3 whole + 1 yolk)
- 2 generous tablespoons of olive oil



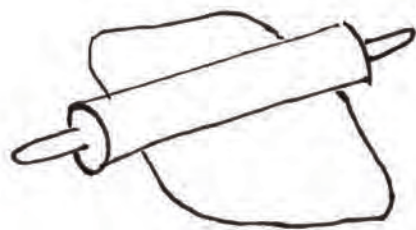
① Combine the flour and salt and form into a nest. Crack the 3 eggs and egg yolk into the middle of the nest. Add the olive oil.



② Slowly beat the eggs with a fork until the flour is incorporated.



③ Knead the dough for 3-5 minutes. Let rest for about 30 minutes.



④ Roll out the dough until it is paper thin, + cut it into shapes. Cook for 1-2 minutes (until it floats) in a pot of boiling, salted water.

Gremolata



1/2 cup italian parsley leaves

1 small clove garlic

zest of 1 small lemon



Mince all ingredients until very fine
and combine together in a small dish.

This is a wonderful topping for soups,
cooked potatoes, salad and eggs.

ROME AND THE SILK ROAD

ROME AND THE **MEDITERRANEAN** AND THE **SILK ROAD**

EDENS EDUCATIONAL DESIGNERS

GOODS GOODS

FOODS FOODS

ROMANS THEN AND NOW:

IX NUMERALS

+ Religion

+ ART

+ DEMOCRACY

+ NAMES APES (apes, Venus, etc Mars, etc) and ASTRONOMY

+ E pluribus unum "Out of many, one" LANGUAGE

+ LATIN MANUS - hand

+ SPANISH MAND - hand

+ ITALIAN MAIN - hand

+ FRENCH MAIN - hand

+ ENGLISH MANUAL - to do by hand

+ government

+ Astronomy

+ Christianity

+ Coral

+ Gold

+ Glassware

+ Olives

+ Rabish

+ Beets

+ Figs

+ Grapes + wine

+ REQUEST

+ ARCHITECTURE

The Silk Road: Trading for Rice Pudding

Summary

In this sixth-grade humanities lesson, students trade between three tables that represent China, India, and Rome to obtain all the ingredients needed to prepare Rice Pudding. This is the fourth and final Silk Road lesson.

Objectives

After this lesson, students will be able to:

- ▶ Cite the contributions of China, India, and Rome to the Silk Road.
 - ▶ Describe the significance of trade along the Silk Road on how we eat today.
 - ▶ Explain the magnitude of cultural exchange that occurred as a result of trade along the Silk Road.
-

Assessments

During this lesson, students will:

- ▶ Name ideas, goods, and foods from China, India, and Rome that were traded along the Silk Road.
 - ▶ Trade goods and foods they have for goods and foods they need to prepare rice pudding.
 - ▶ Trade goods and foods silently, using visual cues and other forms of silent communication to make the necessary trades.
-

Materials

FOR THE CHEF MEETING

- Rice Pudding recipe
- Ingredients and tools for demonstration
- Visual aid
- Trading Values sheet
- China worksheet
- India worksheet
- Rome worksheet

INGREDIENTS

- Rice
- Milk
- Cinnamon
- Cardamom pods
- Sugar
- Salt
- Eggs
- Raisins
- Butter
- Vanilla extract
- Oranges
- Dried apricots
- Lemon
- Mangos

TOOLS

- Cast-iron Dutch oven
- Zester
- Wooden spoon
- Chef's knives
- Paring knives
- Cutting boards
- Measuring cups
- Measuring spoons

EQUIPMENT

- Stove

BEFORE YOU BEGIN

- Collect all the tools and ingredients, and then distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Create the visual aid.
- Copy the Rice Pudding recipe to hand out.
- Copy the Trading Values sheet, one for each table.
- Copy the China worksheet, once for the corresponding table.
- Copy the India worksheet, once for the corresponding table.
- Copy the Rome worksheet, once for the corresponding table.
- Prepare the rice.
- Conceal ingredients and tools and with a tablecloth.

Procedures

1 AT THE CHEF MEETING

1. Meet the students outside and instruct them to wash their hands and go directly to their tables when they enter the kitchen.
2. Welcome students to the kitchen for the culminating lesson of their Silk Road journey. Inform the students that today each table will represent China, India, or Rome. Explain that on each table, under the tablecloth, is a set of goods and foods that is unique to each region. Explain that today's recipe uses ingredients from all three regions of study along the Silk Road: China, India, and Rome. The recipe is a secret that will be revealed at the end of the trading.
3. Invite students at each table to state their region, and make educated guesses about items that might be under the tablecloth using the visual aid provided.
4. Explain that each table has a worksheet that provides a list of the goods and foods needed to prepare the secret recipe, and also a Trading Values sheet, which replicates information found on the visual aid.
5. Explain that students will work in pairs, and are responsible for trading their region's items in two places: once in each of the other regions.
6. Tell students that once all groups have all the necessary ingredients, there will be a final trade: information for information. Students will explain the item they were trading and what their item was worth in the other regions. In return, the teachers will give them the secret recipe.
7. Tell students that as a final challenge, the trading period will be silent. That means no one may speak, not even to individuals within their own group. This is because on the Silk Road, many traders did not share a common language, making other forms of communication crucial.

2

AT THE TABLE

1. Assign a scribe to use their region's worksheet to keep track of the trades as they are completed.
2. Unveil the ingredients and assign each pair of students an item to trade.
3. Have students use the worksheet to determine what goods and foods from their region they need for the recipe, so they know what remains for trade.
4. Have students visit the other regions (tables) to make their trades. As students are trading, have the scribe keep track of the goods and foods that are coming to the table.
5. Once all the trading is complete, have each pair of students relay what good or food they traded and what it was worth in the other two regions.
6. Tell students that the secret recipe they will be preparing is rice pudding, and give them the recipe so they can begin to cook.
7. Go over the recipe steps and assign jobs.
8. Prepare the recipe.
9. Set the table; eat; clean up.

3

AT THE CLOSING CIRCLE

1. Ask students to use their fingers to rate the food on a scale of 1 to 5. If there is time, ask students to share whether, based purely on the foods native to each region, they would have preferred to live in China, India, or Rome during the time of the Silk Road.

Teaching Notes

Small-group Chef Meetings: We do the chef meeting at our small groups for this lesson instead of gathering around the middle table. This helps to focus students' energy (which tends to be high upon entering and seeing the concealed items on each table) and generally results in students having a better understanding of the trading process, which can feel complicated to some when it is explained to the full class.

Synchronizing timing: Doing small-group chef meetings instead of one large meeting together can make it difficult to coordinate timing across groups. It is important that the trading begins all at the same time, so the three table teachers signal to one another that their groups are ready to trade by standing up. When all three teachers are standing, one signals the beginning of the silent trading period by hitting a gong—the clue to students that it is time for silence.

Silent trading period: We have our students trade in silence because it helps to keep the energy more focused during this very exciting activity. It also is a fun challenge for students to find new forms of communication to make the necessary trades.

Dietary restrictions: Keep alternatives on hand for vegan or lactose-intolerant students. Coconut milk and oil work as excellent substitutes for dairy milk and butter in this recipe.

Rice: We use 5 cups of jasmine rice to make three batches of rice pudding in classes of about 30 students. We always set the rice cooker on well ahead of time so that the rice is ready before the trading period.

Cardamom: Smashing the cardamom pod to slightly open it helps to release its flavor.

Raisins: The recipe calls for adding the raisins into the pudding, but we always facilitate a group decision about whether to add the raisins or keep them as an optional topping because some students have a strong dislike of raisins.

Citrus: We teach students how to supreme the orange (and lemons) by cutting off the skin and then cutting out segments, resulting in citrus slices without pith.

Mango: The mango is often a very popular topping. Cut it up small so that everyone can have some.

Fair share: When we sit down to eat, we always explicitly name that because we are sharing toppings as a group and everyone will be serving their own, it is important to take only enough of each so that everyone who wants some can have some.

When is it done? Students often wonder if you can overcook rice pudding, or how to tell when the pudding is done. We explain that you can't overcook rice pudding because deciding when it is done is based on personal preferences around texture and thickness. The longer it cooks, the thicker it will be.

Stirring: Stirring the rice pudding helps it to develop a creamy texture by releasing the starch from the rice, like risotto.

Leftover rice: We always point out to our students that this recipe is an excellent use for leftover rice. Many are very excited to hear this because they often have leftover rice at home.

Sending spices home: We try to keep a few extra spices on hand for students to take home if they want to make the rice pudding.

Vocabulary

- ▶ Barter
- ▶ Exchange rate
- ▶ Scribe

☑ Connections to Standards

CALIFORNIA STATE, HISTORY-SOCIAL SCIENCE, GRADE 6

- 6.6.7** Cite the significance of the trans-Eurasian “silk roads” in the period of the Han Dynasty and Roman Empire and their locations.
- 6.7.8** Discuss the legacies of Roman art and architecture, technology and science, literature, language, and law.

COMMON CORE, ENGLISH LANGUAGE ARTS & LITERACY, GRADE 6

- SL.6.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
-

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.

Resources

- Rice_Pudding_Recipe.pdf
- Silk_Road_4_Visual_Aid.pdf
- Silk_Road_4_China_Worksheet.pdf
- Silk_Road_4_India_Worksheet.pdf
- Silk_Road_4_Rome_Worksheet.pdf

Rice Pudding

4 cups cooked rice

4 cups milk

1 teaspoon cinnamon

4 cardamom pods

$\frac{2}{3}$ cup sugar

$\frac{1}{2}$ teaspoon salt

2 eggs - beaten

$\frac{1}{2}$ cup raisins

2 tablespoons butter

1 teaspoon vanilla extract

In a heavy bottomed pot combine 4 cups cooked rice, $3\frac{1}{2}$ cups milk, 1 teaspoon cinnamon, 4 cardamom pods, $\frac{2}{3}$ cup sugar and $\frac{1}{2}$ teaspoon salt. Cook over medium heat, stirring constantly, for 15 minutes. In a small bowl combine the remaining $\frac{1}{2}$ cup milk and the 2 beaten eggs. Add milk/egg mixture to the pot along with $\frac{1}{2}$ cup raisins and cook 2 more minutes, stirring constantly. Remove the pot from the heat and stir in the 2 tablespoons butter and 1 teaspoon vanilla extract. Serve warm.

Variations: Top pudding with lemon or orange zest, dried apricots or fresh mango.

CHAAMA india ROMK

1 ^{cup} RICE = 1 ^{CARDAMOM} POD = 1 ^{cup} MILK

1/2 ORANGE = 1 MANGO = 1 ^{TABLESPOON} BUTTER

3 ^{DRIED} APRICOTS = 1/3 ^{cup} SUGAR = 1 EGG

1 ^{CAST IRON} POT = 1 ^{teaspoon} VANILLA = 1/2 ^{cup} RAISINS

1 LEMON = 1/2 ^{teaspoon} CINNAMON = GLASSWARE



CHINA

WHAT WE HAVE:

12 cups Rice

3 Oranges

3 Cast Iron Pots

18 Dried Apricots

6 Lemons



WHAT WE NEED to begin:

- _____ 4 cups Rice
- _____ 4 cups Milk
- _____ 2/3 cup Sugar
- _____ 2 Eggs
- _____ 1/2 cup Raisins
- _____ 6 Dried Apricots
- _____ 4 Cardamom Pods
- _____ 1 teaspoon Cinnamon
- _____ 1 Orange
- _____ 2 Lemons
- _____ 2 Mangos
- _____ 1 teaspoon Vanilla Extract
- _____ 2 tablespoons Butter
- _____ 1 Cast Iron Pot
- _____ Glassware
(12 cups, 2 water pitchers)

J N D J A

WHAT WE HAVE:

Vanilla Extract

Cinnamon

12 Cardamom Pods

6 Mangos

2 cups Sugar



WHAT WE NEED to begin:

- _____ 4 cups Rice
- _____ 4 cups Milk
- _____ 2/3 cup Sugar
- _____ 2 Eggs
- _____ 1/2 cup Raisins
- _____ 6 Dried Apricots
- _____ 4 Cardamom Pods
- _____ 1 teaspoon Cinnamon
- _____ 1 Orange
- _____ 2 Lemons
- _____ 2 Mangos
- _____ 1 teaspoon Vanilla Extract
- _____ 2 tablespoons Butter
- _____ 1 Cast Iron Pot
- _____ Glassware
(12 cups, 2 water pitchers)

R O M E

WHAT WE HAVE:

1 1/2 cups **Raisins**

4 cups **Milk**

6 **Eggs**

6 tablespoons **Butter**

Glassware



WHAT WE NEED to begin:

- _____ 4 cups Rice
- _____ 4 cups Milk
- _____ 2/3 cup Sugar
- _____ 2 Eggs
- _____ 1/2 cup Raisins
- _____ 6 Dried Apricots
- _____ 4 Cardamom Pods
- _____ 1 teaspoon Cinnamon
- _____ 1 Orange
- _____ 2 Lemons
- _____ 2 Mangos
- _____ 1 teaspoon Vanilla Extract
- _____ 2 tablespoons Butter
- _____ 1 Cast Iron Pot
- _____ Glassware
(12 cups, 2 water pitchers)

ROTATION 1 - FALL					
LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K7 - 1 (90-110 Min)	Fried Rice	Historical developments in Chinese agricultural technology, and their impacts on rice production and Chinese culture	<ul style="list-style-type: none"> ▶ Mixed seasonal vegetables ▶ Broccoli ▶ Carrots ▶ Cilantro ▶ Garlic ▶ Greens ▶ Leeks 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 7:</p> <p>Tools 1.3: Select correct knives from the ESY Toolbox. Refine knife skills by using different cuts and sizes while demonstrating knife safety and care.</p> <p>Concepts 3.11 Make connections between the diets of historic cultures and the foods we eat today</p>	<p>California State: History-Social Science</p> <p>7.3.2: Describe agricultural, technological, and commercial developments during the Tang and Sung periods.</p>
K7 - 2 (90-110 Min)	Middle Eastern Meze Platter (hummus, pita, cruditee, and dates)	The influence of the four climatic regions of the Arabian Peninsula on regional agriculture and diet	<ul style="list-style-type: none"> ▶ Carrots ▶ Mint ▶ Parsley ▶ Lemons 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 7:</p> <p>Tools 1.3: Select correct knives from the ESY Toolbox. Refine knife skills by using different cuts and sizes while demonstrating knife safety and care.</p> <p>Techniques 2.4: Understand the versatility of ingredients, and realize that certain ingredients are available in particular seasons.</p>	<p>California State: History-Social Science</p> <p>7.2.1 Identify the physical features and describe the climate of the Arabian Peninsula, its relationship to surrounding bodies of land and water, and nomadic and sedentary ways of life.</p>
K7 - 3 (50 Min)	Ghanaian Black Eyed Peas	The global movement of food during and as a result of the Columbian Exchange	<ul style="list-style-type: none"> ▶ Onions ▶ Greens ▶ Carrots ▶ Potatoes ▶ Cilantro 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 7:</p> <p>Concepts 3.11 Make connections between the diets of historic cultures and the foods we eat today</p>	<p>California State: History-Social Science</p> <p>7.11.2 Discuss the exchanges of plants, animals, technology, culture, and ideas among Europe, Africa, Asia and the Americas in the fifteenth and sixteenth centuries and major economic and social effects on each continent.</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K7 - 4 (80-90 Min)	Three Sisters Tacos (corn tortillas, beans, roasted squash, cabbage slaw)	Comparison of ancient Mesoamerican and modern agricultural techniques	<ul style="list-style-type: none"> ▶ Beans ▶ Cilantro ▶ Onions ▶ Garlic ▶ Winter squash 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 7:</p> <p>Tools 1.1: Use and care for tools and equipment at the ESY Cooking Station, and begin to choose the right tool for each job.</p> <p>Concepts 3.11: Make historical connections between the diets of different cultures historically and the foods we eat today.</p>	<p>California State: History-Social Sciences</p> <p>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.</p> <p>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.</p>
ROTATION 2 - SPRING					
K7 - 5 (80-100 Min)	Tortilla Scramble	Coordinating the timing of two recipes	<ul style="list-style-type: none"> ▶ Cilantro ▶ Eggs ▶ Onions ▶ Potatoes 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 7:</p> <p>Techniques 2.7: Refine tasting skills and adjust seasoning, compare and contrast different recipes in conversation using more advanced descriptive vocabulary.</p> <p>Concepts 3.9: Collaborate to identify, choose, and complete jobs to execute recipes, and explain each individual contribution to the end result.</p>	<p>Common Core: ELA and Literacy:</p> <p>SL.7.1. 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.</p> <p>RI.7.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p> <p>RST.6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K7 – 6 (80–100 min)	Udon Noodle Soup	Coordinating the timing of a variety of recipes	<ul style="list-style-type: none"> ▶ Broccoli ▶ Carrots ▶ Cilantro ▶ Eggs ▶ Green onions ▶ Leeks ▶ Sugar snap peas 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 7:</p> <p>Tools 1.3 Select correct knives from the ESY Toolbox. Refine knife skills by using different cuts and sizes while demonstrating knife safety and care.</p> <p>Techniques 2.4 Understand the versatility of ingredients, and realize that certain ingredients are available in particular seasons.</p> <p>Techniques 2.7 Refine tasting skills and adjust seasoning, compare and contrast different recipes in conversation using more advanced descriptive vocabulary.</p>	<p>Common Core: ELA and Literacy: 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.</p>
K7 – 7 (80–100 Min)	Maki Sushi	Knife skills, cutting techniques and food presentation	<ul style="list-style-type: none"> ▶ Mix of seasonal vegetables (radishes, carrots, leeks, herbs) 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 7:</p> <p>Tools 1.3: Select correct knives from the ESY Toolbox. Refine knife skills by using different cuts and sizes while demonstrating knife safety and care.</p> <p>Techniques 2.4: Understand the versatility of ingredients, and realize that certain ingredients are available in particular seasons.</p> <p>Techniques 2.7: Refine tasting skills and adjust seasoning, compare and contrast different recipes in conversation using more advanced descriptive vocabulary.</p>	<p>Common Core: ELA and Literacy: RH6-8.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) 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. SL.7.1 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.</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K7 – 8 (80–100 Min)	Sauté, Roast, Steam	Cooking techniques and group decision-making	<ul style="list-style-type: none"> ▶ Carrots ▶ Herbs ▶ Lemons ▶ Onions 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 7:</p> <p>Tools 1.3: Select correct knives from the ESY Toolbox. Refine knife skills by using different cuts and sizes while demonstrating knife safety and care.</p> <p>Techniques 2.4: Understand the versatility of ingredients, and realize that certain ingredients are available in particular seasons.</p> <p>Techniques 2.7: Refine tasting skills and adjust seasoning, compare and contrast different recipes in conversation using more advanced descriptive vocabulary.</p>	<p>Common Core: ELA and Literacy:</p> <p>RST.6–8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table)</p> <p>SL.7.1.b. Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.</p> <p>SL.7.1.c. Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.</p> <p>SL.7.1.d. Acknowledge new information expressed by others and, when warranted, modify their own views.</p>
K7 – 9 (80–100 Min)	Iron Chef	Assessment Teamwork and collaboration, kitchen skills and systems	<ul style="list-style-type: none"> ▶ Seasonal vegetables ▶ Herbs ▶ Eggs 	<p>Edible Schoolyard 2.0 In the Kitchen, Grade 7: Assessment: ALL</p>	<p>Common Core: ELA and Literacy:</p> <p>SL.7.1.b. Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.</p> <p>SL.7.1.c. Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.</p> <p>SL.7.1.d. Acknowledge new information expressed by others and, when warranted, modify their own views.</p>

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.

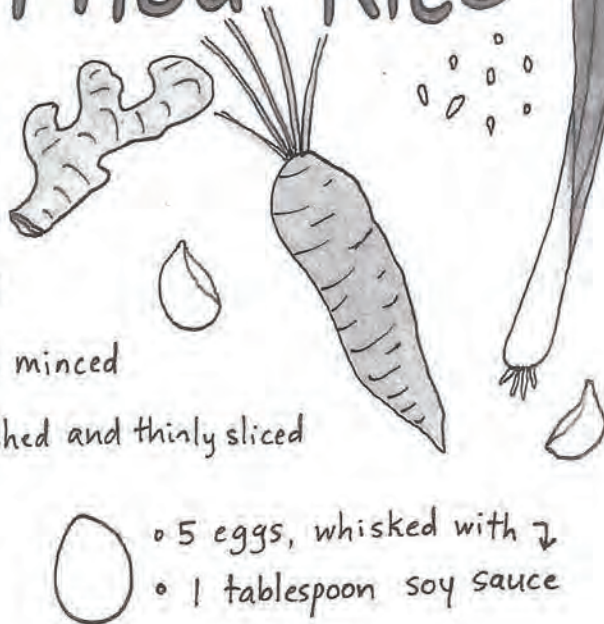
Resources

- Vegetable Fried Rice Recipe
- Vegetable Fried Rice Visual Aid

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!

CHINA AND RICE

NEW TOOLS + QUICK GROWING RICE =

IMPROVED AGRICULTURE



RICE SURPLUS:

an excess of production

Trade & COMMERCE

POPULATION GROWTH

URBANIZATION

ART CULTURE IDEAS



Middle Eastern Meze Platter

Summary

In this seventh-grade humanities lesson, students prepare a Middle Eastern meze platter using ingredients that represent the four major climatic regions of the Arabian Peninsula. They learn that the geographic location of the Arabian Peninsula has made it a center of trade throughout world history, and that this in turn has shaped the region’s cuisine and made the meze platter an iconic dish throughout the region.

Objectives

After this lesson, students will be able to:

- ▶ Identify the four climatic regions of the Arabian Peninsula and the crops native to each region.
- ▶ Understand how the climate of each region influenced the lifestyles and diets of people native to that region.
- ▶ Refine knife skills and practice different cuts and sizes.

Assessments

During this lesson, students will:

- ▶ Answer questions about the climatic regions and foods of the Arabian Peninsula.
- ▶ Describe the four climatic regions of the Arabian Peninsula and discuss their effects lifestyles and diets of people native to each region.
- ▶ Cut vegetables into a variety of sizes and shapes based on how they will be eaten (either for dipping in hummus and yogurt sauce or eating in a pita pocket), and arrange the cut vegetables on a platter with attention to presentation.

Materials

FOR THE CHEF MEETING

- Pita recipe
- Hummus recipe
- Yogurt Sauce recipe
- Recipe ingredients and tools for demonstration
- Meze platter visual aid

INGREDIENTS

- Seasonal vegetables for crudité’s
- Dates
- Pomegranate

FOR THE PITA

- All-purpose flour
- Whole wheat flour
- Yeast
- Sugar
- Salt
- Olive oil
- Eggs

FOR THE HUMMUS

- Garbanzo beans
- Garlic
- Tahini
- Lemons
- Flat-leaf parsley
- Salt
- Pepper
- Olive oil
- Assorted spices to taste, such as cumin, paprika, and sumac

FOR THE YOGURT SAUCE

- Yogurt
- Radish, carrot, or cucumber
- Garlic
- Mint
- Salt
- Assorted herbs to taste, such as parsley, cilantro, and chives

TOOLS

- Mixing bowls
- Reamer or juicer
- Grater
- Garlic peeler
- Mortar and pestle
- Wooden spoons
- Chef's knives
- Paring knives
- Cutting boards
- Measuring beaker
- Measuring cups
- Measuring spoons

EQUIPMENT

- Blender or food processor
- Oven

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.
- Copy the Pita recipe to hand out.
- Copy the Hummus recipe to hand out.
- Copy the Yogurt Sauce recipe to hand out.
- Cook the garbanzo beans.
- Make a batch of pita dough. Allow to rise 30 minutes to 3 hours at room temperature, or overnight in the refrigerator.

Procedures

1 AT THE CHEF MEETING

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

Welcome students and introduce them to the lesson of the day: a Middle Eastern meze platter. The meze platter is a perfect example of how secrets of world history can be unlocked simply by studying the food we eat.

1. First, let's take a moment to recall the previous lesson because today's story is directly connected to our story from last week. Ask for student volunteers to summarize a few key points from the lesson: During the Song Dynasty, Chinese scientists, engineers, and farmers developed new technology to grow rice more efficiently, which resulted in a surplus, which led to population growth, urbanization, and a burgeoning of cultural, scientific, and technological development.
2. Trade is the invisible force behind all of this. Last week we talked about all the

incredible innovations that occurred in China during this time. This growth and innovation were a direct result of people having a more secure food source, and they were also entirely dependent on China's ability to trade and sell the surplus rice and new goods it had with other societies. This takes us to the Arabian Peninsula.

3. Ask students to recall the Silk Road lesson series from sixth grade, when they made dumplings, curry, pasta, and rice pudding. Explain that today we'll be moving west along the Silk Road to the Arabian Peninsula in the Middle East. Explain that the Arabian Peninsula was the center of trade—for knowledge, ideas, technology, goods, and food—between the civilizations of Europe, Africa, and Asia for thousands of years.
4. This brings us back to our recipe for the day: a Middle Eastern meze platter. Ask for a student volunteer to describe what a meze platter is (a variety of small snacks eaten together as a meal). Meze platters originated in the Middle East, and today are enjoyed all over the world, especially throughout the Mediterranean region. Typical components of a meze platter include vegetable salads, grilled meats, dips like hummus and baba ganoush, cheeses and yogurts, olives, pickles, and flat breads like pita.
5. Meze platters are symbolic of the importance of trade in Middle Eastern history. Every area has a unique meze platter based on its traditional dishes and ingredients of the region, and mezes change seasonally. They are a dish made specifically for socializing, and the story goes that they began thousands of years ago as a way for people to gather around the table with traders or travelers from out of town, to share some of the local culinary specialties and enjoy small bites of whatever the visitor had brought from far away. This mixing of local and foreign food is typical of Middle Eastern cuisine: As a cuisine that developed at the crossroads of civilization, almost every Middle Eastern dish is a mix of ingredients and techniques from near and far.
6. Today we'll be making a meze platter with pita, hummus, yogurt sauce, and raw vegetables. In keeping with the tradition of meze, we'll be using seasonal vegetables from our garden, as well as ingredients from farther away. Our meze represents ingredients from all four climatic regions of the Arabian Peninsula.
7. Ask students to identify the four climatic regions of the Arabian Peninsula: desert, oases, coastal plains, and mountains. Review how climate and geography influence lifestyle and impact diet. Factors such as temperature, precipitation, and soil type determine what you are able to grow to eat, what materials are available to build your house with, etc.
8. Identify ingredients representative of each region of the Arabian Peninsula. Incorporate information from the notes:
 - ▶ **Date Palm (Oases):** Regarded as the “tree of life.” Part of the tree was used: the fruit was eaten, the sap was drunk, palm wood was used to build houses, the leaves were used for roofs, the fibers were woven into rope, hollowed-out trunks were used as irrigation pipes, and date pits fed to camels.
 - ▶ **Wheat (Coastal Plains):** Originated in the Middle East and was first domesticated by the Mesopotamians.

- ▶ **Pomegranate (Mountains):** From Persia; are an important symbol in many religions and culture, often as a symbol of fertility; believed to be the “tree of knowledge”; the modern-day word for hand grenade originates from the French word for pomegranate, grenade.
 - ▶ **Yogurt (Desert):** The nomadic peoples of the desert relied on their herds of goat and sheep for everything from food to shelter.
 - ▶ **Garbanzos:** Originated in southern Turkey but very important in India, Pakistan, Latin America, and Europe; also known as chickpea, Indian pea, ceci bean, Bengal gram.
9. The meze we’re making today is an Edible Schoolyard–Arabian Peninsula fusion meze. While we’re cooking, take a moment to reflect on what dishes you might include if you were to make a meze platter that represented your own home and culture.
 10. Ask students to wash their hands and join their table groups.

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

1. Welcome students and introduce them to the lesson of the day: a Middle Eastern meze platter. We’re going to prepare a variety of dishes for our meze platter and take a closer look at how the unique geography and history of the Arabian Peninsula have turned the meze platter into an iconic dish throughout the Mediterranean.
2. First, let’s take a moment to recall the previous lesson because today’s story is directly connected to our story from last week. Ask for student volunteers to summarize a few key points from the lesson: During the Song Dynasty, Chinese scientists, engineers, and farmers developed new technology to grow rice more efficiently, which resulted in a surplus, which led to population growth, urbanization, and a burgeoning of cultural, scientific, and technological development.
3. Trade is the invisible force behind all this. Last week we talked about all the incredible innovations that occurred during China during this time. This growth and innovation were a direct result of people having a more secure food source, and they were also entirely dependent on China’s ability to trade and sell the surplus rice and new goods it had with other societies. This takes us to the Arabian Peninsula.
4. Ask students to recall the Silk Road lesson series from sixth grade, when they made dumplings, curry, pasta, and rice pudding. Explain that today we’ll be moving west along the Silk Road to the Arabian Peninsula in the Middle East. Explain that the Arabian Peninsula was the center of trade—for knowledge, ideas, technology, goods, and food—between the civilizations of Europe, Africa, and Asia for thousands of years.
5. This bring us back to our recipe for the day: a Middle Eastern meze platter. Ask for a student volunteer to describe what a meze platter is (a variety of small snacks eaten together as a meal). Meze platters originated in the Middle East, and today are enjoyed all over the world, especially throughout the Mediterranean region. Typical components of a meze platter include vegetable salads, grilled meats, dips like hummus and baba ganoush, cheeses and yogurts, olives, pickles, and flat breads like pita.

6. Meze platters are symbolic of the importance of trade in Middle Eastern history. Every area has a unique meze platter based on its traditional dishes and ingredients of the region, and mezes change seasonally. They are a dish made specifically for socializing, and the story goes that they began thousands of years ago as a way for people to gather around the table with traders or travelers from out of town, to share some of the local culinary specialties and enjoy small bites of whatever the visitor had brought from far away. This mixing of local and foreign food is typical of Middle Eastern cuisine. As a cuisine that developed at the crossroads of civilization, almost every Middle Eastern dish is a mix of ingredients and techniques from near and far.
7. Today we'll be making a meze platter with pita, hummus, yogurt sauce, and raw vegetables. In keeping with the tradition of meze, we'll be using seasonal vegetables from our garden, as well as ingredients from farther away. Our meze represents ingredients from all four climatic regions of the Arabian Peninsula.
8. Think-Pair-Share: Before coming here, you all saw a video about the four climatic regions of the Arabian Peninsula. 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 describe the four climatic regions represented on the poster, and see if you can identify which region each of our recipes represents.
9. Facilitate a full-class summary of the content from the video: With a raised hand, who can share one or two points from their conversation with their neighbor? Ask students to identify which climatic region each component of the meze represents.
10. Ask students to wash their hands and go to their table groups.

2 AT THE TABLE

1. Meet with the table groups and review the recipes. Emphasize that both the hummus and yogurt sauce are "flexible recipes," which means that adjusting the written recipes according to taste is an important part of preparing both dishes.
2. Demonstrate how to cut vegetables into a crudité and emphasize that attention to detail and presentation are key in preparing today's platter.
3. Assign cooking jobs.
4. Prepare the recipes and set the table.
5. Eat.
6. Clean up.

3 AT THE CLOSING CIRCLE

1. Ask students to use their fingers to rate the food on a scale of 1 to 5. If there is time, ask students to share what foods they would include if they were to prepare a meze platter that represented where they come from.

Teaching Notes

Making the pita: It is very difficult to go wrong with this recipe, but it yields the best results if you proof the yeast and knead the dough thoroughly. To proof the yeast, mix it with warm water and sugar as your first step, and allow the yeast-sugar mixture to sit while you mix the other ingredients in a separate bowl—then mix the two bowls together. Allow at least 5 to 10 minutes or more to knead, and be careful not to tear the dough. Pressing the pita relatively thin for baking (about $\frac{1}{4}$ of an inch) will help it rise to a pocket (the high heat of the oven also makes a key difference here in whether it pockets or not—ideally, the oven is so hot that the outside cooks quickly, trapping steam from the inside as it cooks, and causing the bread to puff). If you have time, 5 or 10 minutes of rest time after kneading before shaping can help.

Selling the yogurt sauce: Making a connection between ranch dressing and yogurt sauce can often increase student buy-in.

Making the hummus: Hummus can be one of the most popular recipes we make, but can also be one of the least, depending on whether or not the cooks add enough salt, acid, and fat. Students are always very excited to create something really delicious that compares to what they get at the store, so we often provide a fair amount of support in helping students to analyze what they're tasting, and to keep working on the recipe until it is "delicious" and not just "okay." A good prompt here is: "That's pretty good. Do you think it could be better?" To smooth or thin the hummus while maximizing flavor, try adding bean-cooking water instead of plain water.

Create a virtual meze platter: This can be a fun conversation to have around the table while eating. For example, "I'm having a meze platter party at my house. I'm bringing tamales because they're important to my culture. What are you bringing?" Prompt each student to take a turn sharing something important to their home or culture to create a table group meze. Once it's been made, see if there is anyone who can remember what every person is bringing.

Selling the dates: Students tend to love the dates once they try them, but can be hesitant to try one at first. We call dates "nature's candy" or "the sweetest thing you can get off a tree," and that usually drums up any enthusiasm that may be lacking.

Vocabulary

- ▶ Crudités
- ▶ Arabian Peninsula
- ▶ Desert
- ▶ Oasis
- ▶ Coastal plains
- ▶ Mountains

Connections to Standards

COMMON CORE

- 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.6-8.7.** 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

- 7.2.1** Identify the physical features and describe the climate of the Arabian Peninsula, its relationship to surrounding bodies of land and water, and nomadic and sedentary ways of life.

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN, 7TH GRADE

- Tools 1.3:** Select correct knives from the ESY Toolbox. Refine knife skills by using different cuts and sizes while demonstrating knife safety and care.
- Concepts 3.11:** Make connections between the diets of historic cultures and foods we eat today.

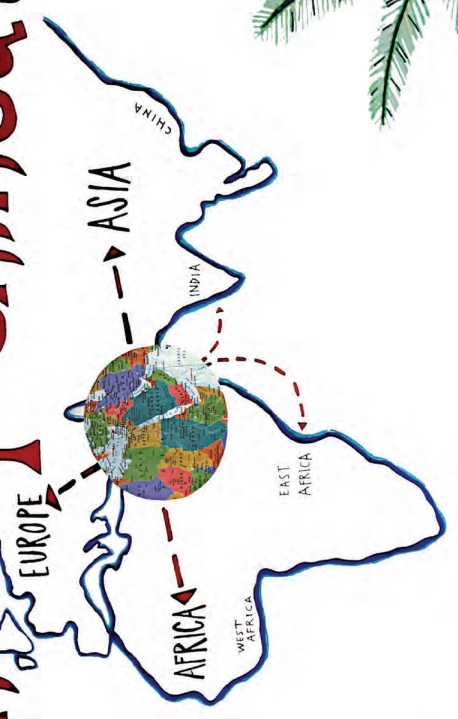
Contributors

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.

Resources

- Arabian Peninsula Visual Aid
- Pita Bread Recipe
- Hummus Recipe

The Arabian Peninsula



THE 4 CLIMATIC REGIONS

- DESERT
- OASES
- PLAINS
- MOUNTAINS

ARCHITECTURE
(BUILDINGS MADE OF ROCK BRICKS)

ARCHITECTURE
(PIET CITIES)

TEARS PORTALITY
(CITIES + PORTS)

FARMING AND FOOD
THE DATE PALM

OASES
وادي

TRANSPORTATION

ARCHITECTURE
(HOMES MADE IN TENT)

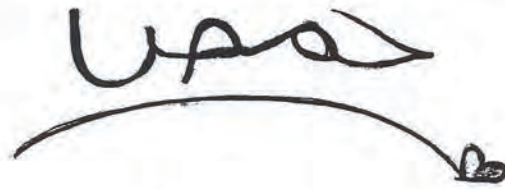
DESERT
صحراء

FOOD + FARMING
(THE HERD BREEDS MILK)
(SHEEP + GOATS)

COASTAL PLAINS
شواطئ (موانئ)

MOUNTAINS
جبال

H U M M U S



2 cups cooked garbanzo beans

1 clove garlic

2 tablespoons tahini

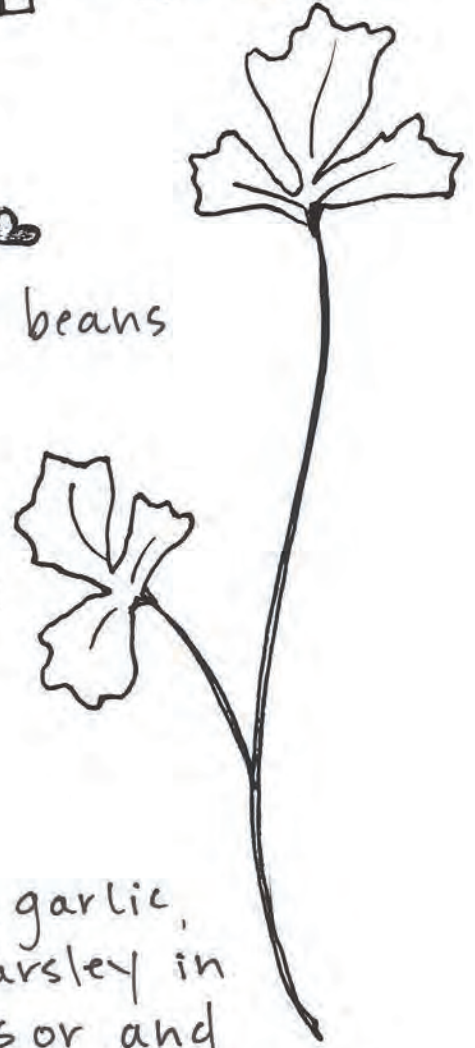
2 tablespoons lemon juice

2 tablespoons parsley

Salt and pepper

Combine garbanzo beans, garlic, tahini, lemon juice and parsley in a blender or food processor and blend until smooth. Add salt and pepper to taste and add water to thin as needed.

Serve with pita, crackers, or fresh vegetables.



Black-Eyed Pea Stew and the Columbian Exchange

Summary

In this seventh-grade humanities lesson, students prepare a Black-Eyed Pea Stew and examine the exchange of foods between Eurasia, Africa, and the Americas during the Columbian Exchange.

Objectives

After this lesson, students will be able to:

- ▶ Discuss the major economic and social effects of the Columbian Exchange on Eurasia, Africa, and the Americas.
 - ▶ Describe how the exchange of food crops during and after the Columbian Exchange impact the foods we eat today.
-

Assessments

During this lesson, students will:

- ▶ Discuss the exchanges of plants, animals, technology, culture, and ideas between Eurasia, Africa, and the Americas during the Columbian Exchange.
 - ▶ Realize that different plants and animals originate in different regions of the world.
-

Materials

FOR THE CHEF MEETING

- Black-Eyed Pea Stew recipe
- Ingredients and tools for demonstration
- Visual aid

INGREDIENTS

- Spiced butter or butter
- Red onion
- Tomatoes
- Chili flakes
- Garlic
- Ginger
- Berbere or chili powder

OPTIONAL INGREDIENTS

- Coconut milk
- Turmeric
- Black-eyed peas
- Water
- Salt
- Cilantro
- Scallions
- Potatoes
- Yams
- Collard greens
- Kale
- Chard
- Carrots

TOOLS

- Heavy-bottomed pot
- Mixing bowls
- Wooden spoon
- Chef's knives
- Paring knives
- Cutting boards
- Measuring beaker and/or measuring cups
- Measuring spoons
- Ladle
- Can opener

EQUIPMENT

- Stove

BEFORE YOU BEGIN

- Create the visual aid.
- Copy the Black-Eyed Pea Stew recipe to hand out.
- Copy the Spiced Butter recipe to hand out.
- Copy the Berbere recipe to hand out.
- Cook the black-eyed peas.
- Prepare the Spiced Butter.
- Prepare the Berbere.
- Gather supplies for the Chef Meeting.
- Collect all the tools and ingredients, and then distribute them to the tables.

Procedures

1

AT THE CHEF MEETING

1. Welcome students back to the kitchen and introduce the recipe for the day: Black-Eyed Pea Stew. The main ingredient in Black-Eyed Pea Stew is black-eyed peas, small white beans with a black spot that looks little bit like an eye. These beans are one of the oldest foods in the world, eaten as a staple crop in Ethiopia and throughout Africa for almost 6,000 years. But the recipe we're making today would not have been possible to make until about 500 years ago. Today we're going to talk about the Columbian Exchange, a major historical event that fundamentally changed how people all over the world ate and part of the reason that we can make this recipe today.
2. Let's start by taking a look at the visual aid. This map shows different foods and where they originated. Until about 500 years ago, all of these foods were almost exclusively found in the places where you see them on the map, so lots of the foods we know and love today did not exist. So for example, there were no such thing as garlic fries. Ask students: Why not? Because potatoes are from South America and garlic is from the Middle East. And there was no such thing as pasta with tomato sauce, hot chocolate, or BLTs. Ask students: Where did the ingredients for those originate?
3. There were some foods that originated in Asia that maybe you could find in Europe, or that originated in Europe that could potentially be found in the Middle East for example, but there were absolutely no foods from the Americas in Europe, Asia, or Africa, and vice versa. Why was this? What happened 500 years ago that may have changed this? Does the year 1492 ring a bell for anyone? In 1492, Christopher

Columbus sailed from Spain to the Americas and made the first European contact in the Americas.

4. But let's take a step back, because our story really starts all the way back at the time of the Silk Road. Who remembers one of the major foods that traders from India traded on the Silk Road? Spices. People in Europe loved spices. They had an insatiable appetite for them, so much so that the Romans even mined gold just to pay for spices. Spices were very expensive. Why? There was a relatively small supply relative to the demand, and all spices traded from India went through the Middle East, from trader to trader. Every trader took a cut of the profits from the sales, and so by the time they made it all the way to Europe, they were very expensive.
5. European royalty were determined to find a better, cheaper way to get spices. They came up with a brilliant idea: They couldn't get the spices by going east, but maybe they could find a new passage to India by sailing west and have a cheaper supply of spices without the middlemen. So the Spanish monarch, Isabella, sent the explorer Christopher Columbus out to find a new route to India. They had absolutely no idea that the entire continents of North and South America were right in the middle of their planned route.
6. Christopher Columbus sailed west across the Atlantic Ocean and in 1492 landed in the Americas. He was convinced he had found India. He didn't find any of the spices Queen Isabella was looking for, but he did encounter many new foods, plants, and animals he was completely unfamiliar with, and he met some of the native people of the Americas. He came back three more times, and the Spaniards sent other explorers as well, to investigate this land that was novel and unfamiliar to them. As they began to meet and make contact with more native people, they began to admire the beautiful gold and gemstone jewelry that some of the local rulers wore, and heard stories of rich empires farther inland.
7. The Spanish empire sent more ships and the conquistadors sought to enrich themselves and their crowns, and convert the locals to Christianity by any means necessary. European explorers began to conquest and colonize the Americas, leading to the fall of the Aztec, Inca, and many other civilizations. As they did so, they took over native agricultural and mining enterprises and sent foods, gold, and other precious metals and gems back to Europe.
8. Europeans sending goods and resources from the Americas back to Europe was part of what we now call the Columbian Exchange—the exchange of plants, animals, technology, culture, ideas, diseases, and people between the Americas, Europe, Africa, and Asia from 1492 to the mid-1600s.
9. But Europeans didn't just bring things back from the Americas to Europe—they also brought things with them that they introduced to the Americas. Perhaps the most influential item traded as part of the Columbian Exchange was disease. Out of everything exchanged during the Columbian Exchange, the diseases brought from Europe to the Americas made by far the greatest impact on human history. Europeans brought diseases like smallpox, chicken pox, measles, and the flu. Today

these diseases are generally no big deal, but back then, the native peoples of the Americas had no immunity, so they caused widespread death. Diseases traveled quickly throughout North, Central, and South America, much faster than the European explorers themselves, because they were carried and passed between Native Americans. It's estimated that within the first 100 to 150 years after 1492, between 85% and 95% of the native populations died. That's like if 9 out of every 10 of you suddenly got mysteriously ill and died from a disease that no one had ever seen and no one knew how to cure.

10. The European rulers became limited in their productivity because of the devastating impact of their diseases and genocide. There were very few native people left to work on the farms and in the mines that supplied them with the riches and foods the crowns desired, especially sugar and tobacco. Wanting to further enrich their nations, European rulers looked to find a new source of labor. What do you think happened next? Where do you think they turned?
11. Europeans began to enslave people from Africa to work on American plantations. This was how the Columbian Exchange led to the Atlantic slave trade. This remains a major part of our country's history and present-day reality.
12. And this brings us back to our recipe. Who can see where black-eyed peas came from? West Africa. The West Africans who were enslaved and brought to the Americas were not able to bring very much with them when they came. But they knew that if there was one small thing they could bring that would remind them of home and give them hope for survival and resilience in an uncertain future, it was seeds.
13. Have you all heard of cornrows? Small, tight braids in your hair. The name comes from the practice of enslaved Africans hiding seeds of corn and other crops in their hair on the journey across the Atlantic. When they made it to their destination, they could unbraid their hair and plant the seeds to feed themselves. Black-eyed peas were one of the foods that traveled to the Americas this way.
14. In addition to black-eyed peas, our recipe today will use ingredients from all over the world, including tomatoes from the Americas, coconut milk from East Asia, spices from India, and garlic from the Middle East, just to name a few. As we cook and eat today, take a moment to reflect on the stories and memories that exist behind everything we eat.
15. Ask students to wash their hands and go to their table groups.

2

AT THE TABLE

1. Meet with the table groups to review the recipe and assign jobs.
2. Prepare the recipe and set the table.
3. Eat.
4. Clean up.

3

AT THE CLOSING CIRCLE

1. Ask students to use their fingers to rate the food on a scale of 1 to 5.
2. If there is time, have students use the visual aid to identify foods that they eat that incorporate ingredients from three or more continents.

Teaching Notes

Different students will have very different responses to, relationships with, and background knowledge about this topic that may be related to their identity.

Silk Road: We refer to the Silk Road at the beginning of the Chef Meeting in this lesson as a way to connect back to the four-lesson Silk Road series students did in sixth grade.

This is a very foolproof recipe. We always add potatoes, carrots, and greens. Any vegetable that you would like to add is fine.

This is a richly flavored, highly seasoned dish that may be surprising for some kids and familiar and comforting for others.

Black-eyed peas prepared in the dish Hoppin' John is a dish traditionally eaten on New Year's, especially in African-American communities in the South.

Berberé is a spice mix that contains many different spices. It is hard for students to obtain at home. Make extra spice blend and send some home with students.

You can substitute butter for spiced butter and the dish is delicious.

☑ Connections to Standards

COMMON CORE, ELA-LITERACY

RH.6-8.6. Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).

RH.6-8.7. Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

CALIFORNIA STATE, HISTORY-SOCIAL SCIENCE, GRADE 7

7.11.2 Discuss the exchanges of plants, animals, technology, culture, and ideas among Europe, Africa, Asia and the Americas in the fifteenth and sixteenth centuries and major economic and social effects on each continent.

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN

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.

URLS

Read about this lesson in the ESY Berkeley Journal.

<http://edibleschoolyard.org/esy-berkeley-journal/2012/01/10/celebrating-new-year-black-eyed-peas>

Resources

- Columbian Exchange Visual Aid
 - Black-Eyed Pea Stew Recipe
 - Spiced Butter Recipe
 - Berbere Recipe
-

Ghanaian Black-Eyed Peas, Berbere, and Spiced Butter recipes are adapted from Marcus Samuelsson's The Soul of a New Cuisine.

THE COLUMBIAN EXCHANGE



BLACK-EYED PEA STEW

- 1/4 cup spiced butter, or 1/2 stick butter
- 1 medium red onion, peeled and diced
- 2 cups chopped tomatoes
- 1/4 teaspoon chili flakes
- 4 cloves garlic, peeled and minced
- 3 tablespoons ginger, peeled and minced
- 1 tablespoon berbere spice mix, or chili powder
- 2 cups coconut milk
- 1 teaspoon turmeric
- 4 cups cooked black-eyed peas
- 1 cup water
- 2 teaspoons salt
- 2 sprigs cilantro, chopped
- 3 scallions, thinly sliced



Melt the butter over medium heat in a heavy-bottomed pot. Add the onion and sauté for 2-3 minutes, until soft. Add the tomatoes and chili flakes and bring to a simmer. Add the garlic, ginger, berbere, coconut milk and turmeric. Return to a simmer. Add the black-eyed peas, water and salt. Simmer for 8-10 minutes. Stir in the cilantro and scallions and serve!

Spiced Butter



- 1 POUND UNSALTED BUTTER
- 1/2 RED ONION, COARSELY CHOPPED
- 1 GARLIC CLOVE, MINCED
- 1 3-INCH PIECE GINGER, PEELED & CHOPPED
- 1 TSP. FENUGREEK SEEDS
- 1 TSP. GROUND CUMIN
- 1 TSP. CARDAMOM SEEDS
- 1 TSP. DRIED OREGANO
- 1/2 TSP. GROUND TURMERIC
- 8 BASIL LEAVES

MELT THE BUTTER IN A MEDIUM SAUCEPAN OVER LOW HEAT, STIRRING FREQUENTLY. AS FOAM RISES TO THE TOP, SKIM AND DISCARD IT. CONTINUE COOKING, WITHOUT LETTING THE BUTTER BROWN, UNTIL NO MORE FOAM APPEARS. ADD THE ONION, GARLIC, GINGER, FENUGREEK, CUMIN, CARDAMOM, OREGANO, TURMERIC, AND BASIL AND CONTINUE COOKING FOR 15 MINUTES, STIRRING OCCASIONALLY. REMOVE FROM HEAT AND LET STAND UNTIL THE SPICES SETTLE. STRAIN THROUGH A FINE-MESH SIEVE BEFORE USING.

Berberé

- 1 tsp. fenugreek seeds
- 1/2 cup ground dried serrano chilies
- 1/2 cup paprika
- 2 tbs. salt
- 2 tsp. ground ginger
- 2 tsp. onion powder
- 1 tsp. ground cardamom
- 1 tsp. ground nutmeg
- 1/2 tsp. garlic powder
- 1/4 tsp. ground cloves
- 1/4 tsp. ground cinnamon
- 1/4 tsp. ground allspice



Finely grind the fenugreek seeds with a mortar and pestle. Stir together with the remaining ingredients in a small bowl until well combined. Makes 1 cup.

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

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.

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

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.

EDIBLE SCHOOLYARD IN THE KITCHEN CLASSROOM, GRADE 7

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

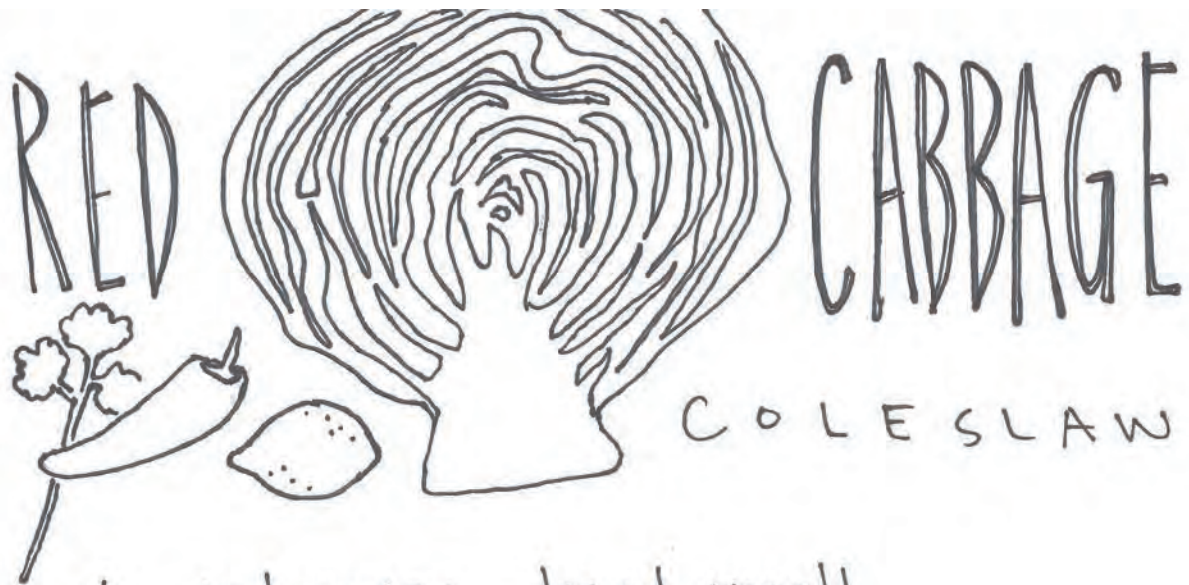
with olive oil
salt and pepper



Cook

at 400° in
a single layer





- $\frac{1}{3}$ red onion, diced small
- 1-2 limes, juiced
- 1 small red cabbage, thinly shredded
- 1 jalapeño, diced small
- $\frac{1}{3}$ 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

1/2 onion, chopped

1 jalapeno, chopped (optional)

Juice of 1/2 a lime

Salt and pepper to taste

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



Tortilla Scramble with Roasted Potatoes

Summary

In this seventh-grade humanities lesson, students prepare a Tortilla Scramble with Roasted Potatoes and are introduced to the Reflection Cards as a means of identifying and practicing the kitchen skills utilized in their culminating lesson: the Iron Chef Challenge.

Objectives

After this lesson, students will be able to:

- ▶ Utilize Reflection Cards to promote self-reflection on team and individual performance.
 - ▶ Communicate effectively to coordinate a variety of tasks.
 - ▶ Practice reading and following a recipe.
-

Assessments

During this lesson, students will:

- ▶ Focus on the People, Kitchen Classroom, and Clean as You Go Reflection Cards and practice maintaining a clean cooking station through collaborative and individual work.
 - ▶ Communicate clearly to complete two dishes requiring different timing.
 - ▶ Follow and complete Tortilla Scramble recipe.
-

Materials

FOR THE CHEF MEETING

- Tortilla Scramble recipe
- Reflection Cards
- Ingredients and tools for demonstration
- Wash, Cut, Season, Roast visual aid (chalkboard)

INGREDIENTS FOR THE TORTILLA SCRAMBLE

- Butter
- Onion
- Red bell pepper
- Green bell pepper
- Corn tortilla
- Eggs
- Monterey Jack cheese
- Salt
- Pepper

INGREDIENTS FOR THE ROASTED POTATOES

- Potatoes
- Olive oil
- Salt
- Pepper

TOOLS

- Cast-iron Dutch oven
- Sheet pan
- Parchment paper
- Mixing bowls
- Grater
- Crinkle cutter
- Wooden spoon
- Offset spatula
- Whisk
- Chef's knives
- Paring knives
- Cutting boards
- Measuring cup
- Measuring spoons
- Oven mitts

EQUIPMENT

- Stove
- Oven

BEFORE YOU BEGIN

- Collect all the tools and ingredients, and then distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Create the Roasted Vegetable visual aid on the chalkboard.
- Copy the Tortilla Scramble recipe to hand out.

Procedures

1 AT THE CHEF MEETING

1. Welcome students back to the kitchen and introduce the lesson: Tortilla Scramble and Roasted Potatoes. Explain that their spring rotation consists of five lessons, with the fifth and final lesson being the Iron Chef Challenge.
2. Introduce the Reflection Cards as categories from the Iron Chef ballot and explain that the kitchen staff has prepared a series of lessons and matched each one with a few of the Reflection Cards to help students practice specific skills.
3. Identify People, Kitchen Classroom, and Clean as You Go as the cards/skills matched with this lesson.
4. Define the People category as focusing on teamwork and collaboration and give examples such as: Was the group inclusive when sharing ideas and making decisions? Did you listen when others were talking?
5. Tell the story of an Iron Chef team that had the most delicious, beautifully presented food but lost points because they did not work collaboratively and harmoniously.
6. Introduce the Kitchen Classroom Reflection Card and have students do a quick review of kitchen systems.
7. Introduce the Clean as You Go Reflection Card and explain that they will be practicing

this skill by working as a group to clean and organize their cooking stations before inviting their teacher to come and assess their results.

8. Introduce the Tortilla Scramble recipe, review the method for roasting vegetables, and point out that these two recipes have different cooking times, requiring students to coordinate with each other to ensure that the dishes are ready at the same time.
9. Ask students to wash their hands and join their table groups.

2 AT THE TABLE

1. Small-group check-in: What is your favorite way to prepare eggs?
2. Meet with the table groups to introduce the ingredients, review the recipe, and assign jobs.
3. Prepare the recipe 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 them to share a specific example of how they practiced a skill from one of the Reflection Cards paired with the lesson.

Vocabulary

- ▶ Dutch Oven
- ▶ Sauté

Teaching Notes

Adding jobs - Preparation of optional toppings can provide additional jobs. Ideas for toppings are: cilantro, scallions, lime, jalapeños, and sour cream.

Corn tortillas - we liked the 100% corn tortillas better than ones with both corn and wheat flour. The wheat-corn mix tended to become too sweet when cooked.

Tortilla mush - sauteing the vegetables and tortilla strips over high heat, waiting until the vegetables are quite cooked to add the tortillas, and stirring sparingly all help to keep the tortilla strips from getting mushy.

Hot sauces - we always have a variety of hot sauces available. Different students identify with different hot sauces, and providing an array of hot sauces acknowledges students' personal preferences and cultures. 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.

Cooking techniques - this lesson incorporates roasting and sautéing. We use this specific language as much as possible (as opposed to “cooking”) to help students learn to recognize and differentiate between cooking methods.

Potatoes - we used 2¼ pounds of potatoes per group (about 10 people) for this lesson.

Timing - this is a great lesson for students to think about cooking rates and practice communicating with one another to coordinate timing between dishes. To make sure both eggs and potatoes are hot when they get to the table, help students plan to wait until the potatoes are mostly cooked to start scrambling the eggs. It is fine to saute the onions, peppers and tortillas before-hand and turn off the heat if you need to wait. Just make sure to heat the pan again before adding the eggs.

High heat - this recipe came out best for us when we started sauteing on high heat.

Popular food - Students really loved the scramble and the potatoes, and were impressed by how similar the roasted potatoes were to french fries.

Connecting to home - Asking about how students cook eggs at home was a great conversation starter that got students excited to share what they cook at home.

Previous experiences - Students often wanted to do the scrambled eggs their way instead of following the tortilla scramble recipe. Asking them how they cook them and affirming that their methods sounds good too could often help them come to terms with cooking it differently in class.

Connections to Standards

COMMON CORE, ENGLISH LANGUAGE ARTS & LITERACY, GRADE 6

- 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.
- RI.6.7** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
- RST.6-8.3.** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

EDIBLE SCHOOLYARD IN THE KITCHEN CLASSROOM, GRADE 7

- Techniques 2.7:** Refine tasting skills and adjust seasoning, compare and contrast different recipes in conversation using more advanced descriptive vocabulary.
- Concepts 3.9:** Collaborate to identify, choose, and complete jobs to execute recipes, and explain each individual contribution to the end result.

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.

TORTILLA SCRAMBLE



- 1/2 STICK BUTTER (4 TABLESPOONS)
 - 1 MEDIUM YELLOW ONION - PEELED AND DICED
 - 1 RED BELL PEPPER - DICED
 - 1 GREEN BELL PEPPER - DICED
 - 4 CORN TORTILLAS - CUT INTO 1/2 INCH STRIPS
 - 8 EGGS - WELL BEATEN
 - 2 OZ. (ABOUT 1/2 CUP) MONTEREY JACK CHEESE - GRATED
 - 1 TEASPOON SALT
 - 1/2 TEASPOON PEPPER - ABOUT 10 GRINDS
-

- 1) IN A CAST IRON DUTCH OVEN, MELT THE BUTTER OVER HIGH HEAT. WHEN IT BEGINS TO FOAM, ADD THE DICED ONION AND SAUTÉ FOR ONE MINUTE.
- 2) ADD THE DICED RED AND GREEN BELL PEPPER AND SAUTÉ FOR ONE MINUTE.
- 3) ADD THE TORTILLA STRIPS AND SAUTÉ FOR FIVE MINUTES, STIRRING OCCASIONALLY, UNTIL TORTILLA STRIPS ARE GOLDEN BROWN.
- 4) ADD THE EGGS AND TURN THE HEAT TO LOW, STIRRING GENTLY. SEASON WITH SALT AND PEPPER AND COOK UNTIL EGGS ARE DRY, ADD THE CHEESE, STIRRING JUST TO MIX.
- 5) TASTE AND ADJUST SEASONING. READY TO SERVE!

IDEAS FOR TOPPINGS:

CILANTRO

JALAPEÑO

SCALLIONS

LIME

SOUR CREAM

HOT SAUCE

Udon Noodle Soup

Summary

In this seventh-grade humanities lesson, students make the broth and a variety of toppings for udon noodle soup. They learn how to make a simple stock from scratch, practice their knife skills, and coordinate timing as a group to complete a variety of recipes at the same time.

Objectives

After this lesson, students will be able to:

- ▶ Understand that simmering ingredients in boiling water infuses the water with flavor, and apply that knowledge to make a variety of stocks, broths, and teas.
 - ▶ Demonstrate safety and precision in a variety of basic knife skills.
 - ▶ Use their knowledge of the timing required to prepare a range of recipes to coordinate as a group in preparing the recipes to be eaten at the same time.
-

Assessments

During this lesson, students will:

- ▶ Make a simple vegetable stock by simmering chopped vegetables, shiitake mushrooms, and kombu seaweed, and seasoning with soy sauce and mirin.
 - ▶ Julienne carrots and thinly slice sugar snap peas as toppings for their udon bowls.
 - ▶ Coordinate as a group to prepare a number of components for their udon noodle bowls, timing them all to be ready to eat at the same time.
-

Materials

FOR THE CHEF MEETING

- Udon Noodle Soup recipe
- Marinated Tofu recipe
- Soft-boiled Egg recipe
- Visual aid

FOR THE TABLE

- Tools and ingredients for demonstration

INGREDIENTS

- Udon noodles
- Eggs
- Water

FOR THE UDON BROTH

- Water
- Carrots
- Napa cabbage
- Leek
- Scallions
- Garlic
- Ginger
- Shiitake mushrooms
- Kombu
- Soy sauce
- Mirin

FOR THE MARINATED TOFU

- Tofu
- Scallions
- Soy Sauce
- Sesame oil
- Rice vinegar
- Sriracha (or hot sauce of choice)
- Toasted sesame seeds

FOR THE ROASTED BROCCOLI

- Oil
- Salt
- Pepper
- Broccoli

FOR THE TOPPINGS

- Carrots
- Radishes
- Snap peas
- Scallions

TOOLS

- Heavy-bottomed pot
- Stockpot
- Sheet pan
- Parchment paper
- Mixing bowl(s)
- Strainer
- Vegetable peeler
- Spider strainer
- Bench scraper
- Wooden spoon
- Ladle
- Chef's knives
- Paring knives
- Cutting boards
- Measuring beaker
- Measuring cups
- Measuring spoons
- Forks
- Oven mitts

EQUIPMENT

- Stove
- Oven

BEFORE YOU BEGIN

- Collect all the tools and ingredients, and then distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Create the visual aid.
- Copy the Udon Noodle Soup recipe to hand out.
- Copy the Marinated Tofu recipe to hand out.
- Copy the Soft-boiled eggs recipe to hand out.
- Prepare three recipes of Marinated Tofu (preferably at least 12 hours before the first class in the rotation to allow time to marinate).
- Toast sesame seeds to be used in the Marinated Tofu.

Procedures

1 AT THE CHEF MEETING

1. Welcome students back to the kitchen for the second class of their spring rotation. Introduce the recipe for the day: Udon Noodle Soup.
2. Explain that udon noodle soup is a dish traditionally eaten in Japan, but also very popular in many places around the world in areas where people from Japan have immigrated at some point and introduced the food. Just like ramen, another example of a Japanese noodle soup, there are many kinds of udon eaten with a variety of broths and toppings that vary by region and season. What distinguishes udon as udon is the noodle.
3. Udon noodles are thick wheat noodles that originated in Japan. But even though udon and other noodle soups like ramen are now very popular in Japan, the Japanese have not always made noodles. Ask students to recall the Silk Road lesson series from sixth grade: Do you remember where noodles originated?
4. Noodles originated in China as early as 25 AD. About 800 years later, in the ninth century, they first came to Japan. There are many udon origin stories, but the most common one is that in the ninth century, a Japanese monk named Kukai traveled to China to study Buddhism. In the monasteries where he studied in northern China, one of the main foods was noodles. He thought noodles were delicious, and so when he went back to Japan, he brought back information on how to make thick wheat noodles. Over time, what we know today as udon slowly evolved.
5. Traditionally, toppings were based on the season because when people first started eating udon mostly they were farmers and the only foods they had access to were the ones they grew or foraged for. We will also be using seasonal vegetables for our toppings. Right now it is spring. Ask students to think of vegetables that are currently in season.
6. Right now broccoli is in season, so today we are going to roast broccoli as a topping. Ask students to recall from the previous lesson in which they made roasted potatoes the four steps for roasting vegetables: wash, cut, season and cook.
7. Our other toppings today will include sliced carrots, scallions, and mushrooms, as well as soft-boiled eggs. Ask students to explain the difference between a soft-boiled and a hard-boiled egg. Soft-boiled are similar to hard-boiled eggs, but with a runnier yolk.
8. Tell students they will hear more about the recipes and jobs in their table groups.
9. Ask students to wash their hands and go to their table groups.

2 AT THE TABLE

1. Check-in question: What is your favorite kind of soup?
2. Explain recipes and cooking jobs in greater detail: Everyone will start by preparing the udon broth. To make the broth we will simmer chopped vegetables, including

the dried mushrooms and kombu, in water. This extracts their flavor. After making the broth, there are three job groups: Roasted Broccoli, Marinated Tofu, and Toppings. Remind students again the four steps for roasting: wash, chop, season with oil and salt, and bake. Explain that the Marinated Tofu recipe is a pay-it-forward model because the longer the tofu marinates, the more flavor it absorbs. Demonstrate how to slice scallions and sugar snap peas thinly on a bias and how to julienne a carrot. We will cook soft-boiled eggs and noodles towards the end when we are almost ready to eat.

3. Divide students into job groups.
4. Cook, clean up, and eat.

3 AT THE CLOSING CIRCLE

1. Ask students to use their fingers to rate the food on a scale of 1 to 5.
2. If there is time, ask students to share what toppings they would add to their noodle soup if they were to make it at home.

Vocabulary

- ▶ Broth
- ▶ Marinate
- ▶ Julienne
- ▶ Kombu

Teaching Notes

Student-created lesson: This lesson was created by five eighth-grade students who worked with us for the 2016-17 school year as IWEs (Independent Work Experience). Designing the lesson from start to finish—including brainstorming and deciding on the recipe and lesson focus, recipe testing, researching and developing the Chef Meeting and Small Group meetings, creating the lesson materials, and teaching the lesson in the classroom—was one of the major projects they worked on during the year.

Cooking jobs: During the small-group check-in, students chose between three jobs: marinated tofu, roasted broccoli, or toppings. Whichever students finished their job first moved on to work on eggs and noodles.

Knife skills: This is a great lesson for students to practice focus and precision with their knife skills. Add or modify any toppings to teach any knife skills.

Cooking techniques: Because this lesson is one of the four leading up to our Iron Chef challenge, in which seventh grade students plan and prepare a meal independent from adult help, we make sure to highlight the transferable cooking techniques they're using. We point out that this is a second way of preparing eggs (after the scramble they created in the previous lesson), and the second time they've roasted a vegetable (after the potatoes from the previous lesson).

Making the broth: We had all students in each group start by working on the broth. Starting ingredients simmering early allowed it time to develop a full flavor. This also simplified the workflow of the lesson because every student could move on from the broth to their designated job.

Mirin: Mirin is a cooking wine often used in Japanese cuisine. It contains a small amount of alcohol that cooks out while the broth simmers. We chose to use Eden brand because it doesn't list alcohol content on the outside of the bottle, and also doesn't contain any additives that many other brands have.

Salty soy sauce: Encourage students not to add salt to the broth while it cooks because they'll add soy sauce later in the cooking process.

Kombu and mushrooms: The kombu and mushrooms both add a savory meaty flavor to the broth. While the mushrooms are excellent cooked for as long as possible, the kombu should be added at the end and simmered gently. Take care not to boil the kombu too long or hard because it may leave a fishy flavor in the broth. The mushrooms can be reserved after the broth has finished cooking and sliced to be used as udon toppings.

Flavorless veggies: Our students were often consternated at first to see the vegetables used to make the broth going in the compost because to them it seemed very wasteful. They were delighted to taste them, though, and discover that they had lost their flavor, which was now in the broth.

Soft-boiled eggs: Not every student wanted a soft-boiled egg so we often had one student take "egg orders." Sometimes if very few students ordered an egg, we would cook a few extra. Though students could initially be skeptical of soft-boiled eggs, they tended to love them in the udon broth. The soft yolks add a delicious richness.

Straining the broth: This felt scary for some students. We intentionally taught them how to pour away from themselves to avoid being burned by steam, and sometimes did it ourselves depending on how comfortable the students were with it.

Pay-it-forward tofu: We used a pay-it-forward model for the marinated tofu where each class made tofu for the following class and ate tofu prepared for them by the previous class. This gave the tofu time to marinate and become very flavorful.

Marinating: Have students taste the tofu before and after they season it to see how tofu absorbs flavor. Have them also compare the flavor of the marinated tofu they make, and the marinated tofu made by the previous class to see how flavor soaks in over time. If they want to, they can season the already-marinated tofu with a little more of the same ingredients to layer and intensify the flavors.

Medium to firm tofu: We used medium or firm tofu for this recipe (not soft or extra-firm).

Tofu literacy: We were surprised how many students were baffled by how to open a package of tofu. We started explicitly teaching this to each tofu group, showing them how to open it at the sink and drain the liquid before taking out the tofu.

Tofu sauce: Try pouring some of the marinated tofu sauce into your broth. It's delicious!

Toasted sesame seeds: We toasted sesame seeds in advance because it was one job too many for our 90-minute classes.

Timing and stove space: We used two burners to complete all the components of this meal. On one burner we made the broth. On the other burner we boiled a large pot of water and first boiled the eggs, then cooked the noodles in the same water. If you do this, make sure to cook the eggs early (about 20 minutes before sitting down to eat) to make sure you have enough time to get the water back to boiling and cook the noodles after the eggs are done.

Bringing it home: This recipe is very popular with students, and we always make sure to point out how easy it is to make at home. Students can make their own broth, or use any premade broth, dried noodles, and any toppings they like.

Table etiquette: We point out that this style of food originated in a place with different etiquette and norms around eating. Encourage students to hold the bowl close to their mouths while they eat to minimize dripping and to drink from the bowl like a cup to enjoy all the broth.

Awareness of self and others: This lesson is a great opportunity for students to practice awareness of self and others while eating. We had students serve themselves, but pointed out that they should be aware of how much food they take so that everyone gets a fair share.

Popular recipe: Our students loved this food. It was one of our most Instagrammed recipes.

Connections to Standards

COMMON CORE, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 7

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.

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 sizes while demonstrating knife safety and care.

Techniques 2.4 Understand the versatility of ingredients, and realize that certain ingredients are available in particular seasons.

Techniques 2.7 Refine tasting skills and adjust seasoning, compare and contrast different recipes in conversation using more advanced descriptive vocabulary.

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.

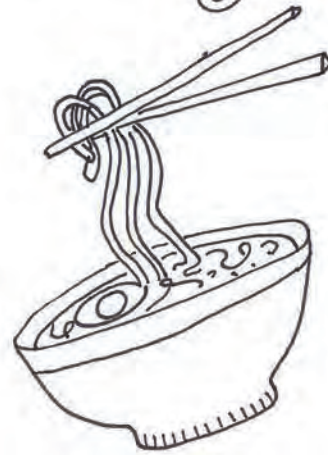
Udon Noodle Soup

① MAKE THE BROTH

- Chop the following vegetables into small pieces:

- 3 CARROTS
- 2 LEAVES NAPA CABBAGE
- 1 SMALL LEEK
- 4 SCALLIONS
- 3 CLOVES GARLIC
- 1/2 INCH GINGER
- 4 WHOLE DRIED SHITAKE MUSHROOMS

- Combine the chopped vegetables and ▸ 10 CUPS WATER in a medium pot. Heat over high heat to bring to a simmer, then reduce heat to simmer for 15 to 20 minutes.
- Add ▸ 4 2-INCH PIECES KOMBU. Keep at a bare simmer for 5 minutes.
- Strain out the vegetables and kombu. Save the mushrooms to slice as a topping.
- Stir in:
 - 1/4 CUP PLUS 2 TABLESPOONS SOY SAUCE
 - 2 TABLESPOONS PLUS 1 TEASPOON MIRIN
- Taste and adjust seasonings.



② COOK THE NOODLES

- In a large pot of boiling water, cook 20 OZ. FRESH UDON NOODLES for about 3 minutes, or until done. (or 8 oz. dried udon noodles or spaghetti.)

③ PREPARE THE TOPPINGS

- Slice or julienne SCALLIONS, CARROTS, SUGAR SNAP PEAS, or other vegetables.
- Roast, sauté, or fry BROCCOLI or other vegetables.
- Soft-boil EGGS, marinate TOFU, or prepare any other topping you would like.

④ PUT IT ALL TOGETHER AND ENJOY!

Marinated Tofu

- 1 14 ounce block of tofu
- 2 scallions, very thinly sliced
- 3½ tablespoons soy sauce
- 1½ tablespoons sesame oil
- 1 tablespoon rice vinegar
- ½ tablespoon sracha (or hot sauce of choice)
- 1 tablespoon toasted sesame seeds*

1. In a medium bowl, whisk to combine all ingredients except tofu
2. Slice the tofu into ½ inch cubes and gently mix with dressing
3. allow tofu to marinate in the fridge for at least an hour, or overnight
4. Right before eating, taste and adjust seasonings. Serve over rice, noodles, in a sandwich, or cook into a stir fry.

* To toast sesame seeds:

heat a pan over medium heat. Without adding oil, add the sesame seeds to the pan. Cook, stirring occasionally to make sure they toast evenly. The seeds will darken as they toast, turning from white to brown, and the smell will intensify. As soon as the seeds are a shade of brown you like and smell good to you, take them off the heat and pour into a bowl so they don't continue to cook.

Maki Sushi

Summary

In this seventh-grade humanities lesson, students make maki sushi and focus closely on their knife skills and on displaying their food artfully. This is the third in the five-lesson series leading up to Iron Chef, the culminating challenge of the seventh-grade kitchen experience.

Objectives

After this lesson, students will be able to:

- ▶ Cut vegetables into a variety of sizes and shapes depending on their intended use.
 - ▶ Focus closely on their work, striving to improve with each iteration.
 - ▶ Prepare aesthetically pleasing presentations of food.
-

Assessments

During this lesson, students will:

- ▶ Cut carrots and cucumbers in a julienne for use in maki sushi.
 - ▶ Apply the principle of kodawari to their work and make incremental improvements to their knife skills.
 - ▶ Practice laying out their ingredients with a focus on beauty.
-

Materials

FOR THE CHEF MEETING

- Visual aid
- A cherished well-crafted object or tool, in this case a knife

INGREDIENTS FOR THE MAKI SUSHI

- | | |
|---|---|
| <input checked="" type="checkbox"/> Carrots | <input checked="" type="checkbox"/> Rice |
| <input checked="" type="checkbox"/> Cucumber | <input checked="" type="checkbox"/> Rice vinegar |
| <input checked="" type="checkbox"/> Radish | <input checked="" type="checkbox"/> Sugar |
| <input checked="" type="checkbox"/> Daikon radish | <input checked="" type="checkbox"/> Salt |
| <input checked="" type="checkbox"/> Green onions | <input checked="" type="checkbox"/> Wasabi |
| <input checked="" type="checkbox"/> Avocado | <input checked="" type="checkbox"/> Soy sauce |
| <input checked="" type="checkbox"/> Eggs | <input checked="" type="checkbox"/> Gari (pickled ginger) |
| <input checked="" type="checkbox"/> Nori | |

TOOLS

- Saucepan
- Vegetable peeler
- Crinkle cutter
- Offset spatula
- Chef's knives
- Paring knives
- Cutting boards
- Measuring spoons
- Large mixing bowls
- Whisks

EQUIPMENT

- Stove
- Griddle or large cast-iron pan

BEFORE YOU BEGIN

- Collect all the ingredients and tools, and distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Create the visual aid.
- Copy the Maki Sushi recipe to hand out.

Procedures

1

AT THE CHEF MEETING

1. Today we are going to make Maki Sushi. I know some of you may be wondering how we can make sushi without using any fish or shellfish. We are going to make some delicious vegetable and egg sushi.
2. Egg sushi or tamago (yaki) is one of the most important types of sushi. It is a rolled or folded omelette that is then sliced and served in sushi. It is traditionally used as a test of a sushi chef's ability. If a sushi enthusiast goes to a new sushi restaurant, they might order one order of the tamago to see how the chef prepares it. If it is good, they will stay for a whole meal; if not, they would pay and leave to find another place to eat.
3. Today's areas of focus are beauty and focus. We are going to dive into focus through looking at the Japanese principle of kodawari. Kodawari is the relentless and uncompromising pursuit of perfection, complete devotion to a mastering a craft. To practice kodawari is to have complete focus on your work. One example of a person who exemplifies kodawari that I have benefited from personally is the bladesmith Shosui Takeda of Takeda Hamono. Takeda Hamono is a family blacksmithing business started in 1920. Shosui started working in the shop learning the craft from his grandfather and father at age 12 but didn't commit to it full-time until he was 28. That was in 1985. He has been building upon his father's and grandfather's knowledge and striving to make the best possible knives for the last 30 years. Here is one of his knives. (Show knife and take one or two questions.) I absolutely love my knife and think it is perfect. It cuts wonderfully and I love the experience of sharpening it. It is forged from Aogami super steel, which is incredibly tough. This makes it harder to forge, but it also means that I can sharpen it to a very fine edge that will stay razor sharp for a very long time. I think its Kurouchi finish is gorgeous and the handle feels wonderful. It is a beautiful and exceptional tool. Despite all this,

Takeda-san is not yet completely satisfied with his knives. Listen to what Shosui has to say about his work.

“A true craftsman chooses the method which creates the best knife for the user. Even if this process means more work to make and sell the knife, this is the path I will always choose. My goal is to pursue the best quality no matter what... Even after twenty-six years of knife making, I still don’t know what the perfect knife is and all I can do is my absolute best every time. I still haven’t produced a knife that I’m one hundred percent happy with.”

— Shosui Takeda, quoted on

<http://blog.chuboknives.com/2014/07/30/beautiful-presentation/>

4. This practice of kodawari can be applied to any activity, craft, hobby, or type of work. Today I am asking you to try to practice kodawari in your work today as we prepare Maki Sushi. I don’t expect you to master the skills we are going to practice today, but I think you may be surprised at how much you can improve if you focus closely on your work. In your small group, your teacher will demonstrate how to cut on an angle and how to julienne vegetables. Some of you may have tried this before in the udon lesson. If you are doing it again, work to improve upon your technique.. You are doing this for yourself, not to impress others. You are doing this because you can get better by focusing.
5. When you are done cutting or preparing your ingredient, take time to lay it out in a beautiful way so that our food can be the centerpiece of our table today. Your care and focus will come through in the food that you prepare. When you are eating, look for this care and focus in things that others have prepared.
6. See if any students have questions about sushi, kodawari, the knife, or Mr. Takeda.
7. Ask students to wash their hands and go to their table groups.

2

AT THE TABLE

1. Small-group check-in: What is something you do where you get very focused? This could be a sport, a hobby, reading, or school work.
2. Introduce jobs for the day in more detail. Demonstrate how to julienne and cut on a bias.
3. Split up into cooking jobs.
4. Cook.
5. Eat. Circle back to the students’ answers to the check-in question and learn more about their pursuits in which they find great focus.
6. Clean up.

3

AT THE CLOSING

1. Ask students to rate the food using their fingers from 1 to 5.
2. If there’s time, reflect on discussion from the small table groups. Encourage students to continue reflecting on the idea of kodawari.

Teaching Notes

Cherished object: Bringing in a physical object for chef meeting really grabs students' attention.

Kodawari: Introducing the specific concept of kodawari in the chef meeting for this lesson was new this year. We were captured by the sense of pride in work and attention to detail it seemed to inspire in many students.

Juliennig: Some students were intimidated by the precision required for a julienne cut. When introducing it, we often shared that this was a technique that would be difficult to get at first—they shouldn't expect to be successful the first time they try it. However, if they continue to work on it over the course of the class period, they will improve very rapidly and may be surprised by the mastery they'll be able to develop by the end of class.

Raw food: We liked to remind students to prioritize hygiene in this lesson by frequently washing their hands because we would all be eating the food raw.

Varying cuts: Encourage students to try multiple cutting techniques in this lesson, including dicing, slicing, juliennig, grating, and chopping or mincing.

Nori: Share with students that nori is dried seaweed. Some students with sushi-making experience were disappointed at first to find out that we weren't rolling long sushi rolls and instead cutting nori sheets into quarters. We explained that this way you can add more toppings and try multiple different combinations.

Egg techniques: This was the third consecutive lesson in which our students cooked eggs using a different technique (the first was tortilla scramble and the second was soft-boiled egg for udon noodle soup). Asking students which egg-cooking technique was their favorite, and also whether they have special ways of making eggs at home, can make for good conversation at the table.

Cooking the eggs: We cooked the rolled omelette on a griddle at about 375F. It could also be made in a heated pan on medium.

Vinegar smell: Many students were shocked by the smell of the vinegar heating up for the rice dressing. We warned students that it would have a pungent smell, but assured them that this was the typical way to make a sushi rice dressing.

Bringing it home: Asking students if they practice kodawari in any activities in their daily life can be a great conversation.

Food as the centerpiece: When setting the table, we encouraged students to think about presentation and to lay the sushi fillings out beautifully. Many students were very excited to do this.

Pacing: Encourage students to think about quantities for everyone's fourth rolls when taking rice and toppings for the first.

Vocabulary

- ▶ Kodawari
 - ▶ Tamago
 - ▶ Julienne
-

☑ Connections to Standards

COMMON CORE STATE STANDARDS, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 7

- RH.6-8.7** Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) 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.
- SL.7.1** 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.
-

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.

MAKI SUSHI 巻き寿司



1. PREPARE YOUR INGREDIENTS

- Mix 5 CUPS COOKED RICE + 1 RECIPE SUSHI RICE DRESSING
- Cut 1 PACKAGE DRIED SEAWEED (NORI) into palm-sized squares
- Slice, dice, grate, shave, julienne, or mince into small pieces A VARIETY OF VEGETABLES (carrot, radish, daikon, avocado, cucumber & more!)
- Prepare any OTHER TOPPINGS you like, such as CRAB, SHRIMP, EEL, EGG, WASABI & PICKLED GINGER

SUSHI RICE DRESSING

- 3 1/2 tablespoons RICE VINEGAR
- 1 1/2 tablespoons SUGAR
- 1 tablespoon SALT

- Combine vinegar, sugar, and salt in a small pan. Heat over medium heat, stirring until sugar and salt dissolve.

2. ASSEMBLE YOUR ROLLS

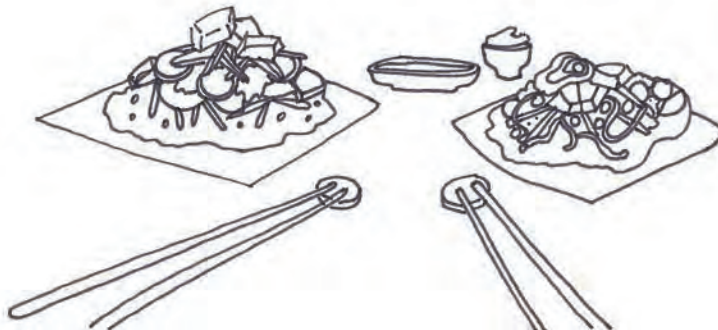
- Place 1-2 tablespoons dressed sushi rice on a square of seaweed. Top with assorted vegetables, egg, or other ingredients of your choice.

3. EAT! - Serve with your choice of soy sauce, wasabi, and pickled ginger.

ROLLED OMELETTE

- 8 EGGS • 1/4 cup WATER
- 1 tablespoon SOY SAUCE
- OIL for cooking

- Whisk together eggs, water and soy sauce. Heat oil in pan over medium-high heat. Pour egg mixture into pan to thinly coat the bottom. Cook omelettes one by one, gently rolling egg as it cooks.



Sauté, Roast, Steam

Summary

In this seventh-grade humanities lesson, students review and practice three cooking methods that they have used in previous kitchen lessons. Students work together to make decisions as to how they will utilize different methods to cook different ingredients. This is the fourth in the five-lesson series leading up to Iron Chef, the culminating challenge of the seventh-grade kitchen experience.

Objectives

After this lesson, students will be able to:

- ▶ Draw upon their knowledge of multiple cooking techniques to prepare fresh vegetables without following a recipe.
 - ▶ Work collaboratively and inclusively to make group decisions.
 - ▶ Cook without relying on the support or guidance of an adult.
-

Assessments

During this lesson, students will:

- ▶ Sauté, roast, and steam vegetables following simple technique guidelines instead of detailed recipes.
 - ▶ Decide how to cook each of their vegetables while practicing positive group behaviors and habits.
 - ▶ Prepare their meal independently of their cooking teacher.
-

Materials

FOR THE CHEF MEETING

- Visual aid outlining cooking methods
- Ranch Dressing recipe
- Cooking Methods reference sheet

INGREDIENTS

- | | |
|--|--|
| <input checked="" type="checkbox"/> Sweet potatoes | <input checked="" type="checkbox"/> Mayonnaise |
| <input checked="" type="checkbox"/> Green beans | <input checked="" type="checkbox"/> Buttermilk |
| <input checked="" type="checkbox"/> Asparagus | <input checked="" type="checkbox"/> Oil |
| <input checked="" type="checkbox"/> Cauliflower or carrots | <input checked="" type="checkbox"/> Salt |
| <input checked="" type="checkbox"/> Garlic | <input checked="" type="checkbox"/> Pepper |
| <input checked="" type="checkbox"/> Thyme | |

TOOLS

- Small stockpot
- Steamer basket
- Chef's knives
- Paring knives
- Roasting pan
- Skillet

EQUIPMENT

- Oven
- Stovetop

BEFORE YOU BEGIN

- Collect all the ingredients and tools, and distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Create the visual aid.
- Copy the Sauté, Roast, Steam methods sheet to hand out.
- Copy the Ranch Dressing recipe to hand out.

Procedures

1 AT THE CHEF MEETING

1. Today's lesson is built around giving you practice for Iron Chef. During Iron Chef, you are going to be cooking without recipes and without adult support. You are also going to be making group decisions about what to prepare and who is going to work on each task. Today you will practice those skills in our Sauté, Roast, Steam lesson.
2. You are going to prepare some of the cauliflower using each of these three cooking methods so that you can compare how each method impacts flavor and texture. You will decide how to prepare each of the other vegetables as a group.
3. Can anyone explain what it means to "sauté" something? To sauté means to cook something in a pan with a little oil over medium-high heat, typically with some onion or garlic and salt, pepper, or other spices or seasonings.
4. What dishes use sautéing that you cook at home? That we have cooked here?
5. Based on your experience eating sautéed dishes, how would you describe how sautéing impacts flavor?
6. What does it mean to "roast" something? Roasting is a way of cooking food in a dry, hot (400F+) oven. Generally ingredients are covered with a little oil, salt, and other seasonings before going into the oven.
7. What vegetables have we roasted here? How would you describe how roasting impacts flavor? Texture?
8. Steaming or boiling is a quick cooking method that highlights the existing flavor of vegetable without changing it much. It's especially good for delicately flavored or textured vegetables.
9. What vegetables have you had steamed or boiled before?
10. Emphasize that boiling or steaming should be a quick process. Remind the students how tasteless the vegetables were after boiling for 20 minutes to make stock in a previous class.
11. We are also going to make homemade ranch dressing that you can eat with your vegetables if you choose.

12. Other things to keep in mind:
13. Maximize use of the food. Minimize waste.
14. Show how to use a peeler most efficiently.
15. Even cuts ensure even cooking.
16. Care for your tools!
17. Ask students to wash their hands and go to their table groups.

2

AT THE TABLE

1. Small-group check-in: How are you doing today?
2. Explain that in a few minutes the students will be taking the lead and making a group decision of how to prepare the meal. To prepare them for that process, you are going to share some teamwork and collaboration skills.
3. We noticed that teamwork and collaboration are often talked about, but not often defined. The kitchen teachers sat down and decided that the most important aspects for Iron Chef that the judges should watch for are the following:
 - ▶ Group is inclusive.
 - ▶ All members contribute.
 - ▶ Group members listen to each other.
 - ▶ Group members are respectful of one another.
4. It is easy to think about how not to follow those ideals and what negative, destructive behaviors look like. It's obvious that we don't want to be exclusive by pushing people outside the group, shutting down specific people when they try to contribute, interrupting, or fighting.
5. However, an absence of destructive behavior and interactions is not the same as having lots of positive behaviors and interactions. Instead of just cutting out bad behaviors, we want to build and practice positive interactions and habits.
6. What is a thing you can do in a group setting to make the group more inclusive? Say someone is sitting removed from the table while everyone else is huddled in closely?
 - ▶ Allow students to answer these questions if they can. If not, offer answers such as:
 - ▶ Invite that person to join the group.
 - ▶ Ask that person or people if there is something blocking them from participating.
7. What can you do if you notice that you or another group member is talking most of the time and that another person hasn't spoke at all?
 - ▶ Ask for their opinion on something.
 - ▶ Structure a pause to allow them time to jump in.
8. How can you be a better listener? What practices have you learned or heard of for being a better listener?
 - ▶ Give eye contact to the speaker.

- ▶ Nod along or use other nonverbal clues to show that you are following.
 - ▶ Paraphrase what the speaker said to demonstrate understanding.
9. How can we show our respect for one another?
 - ▶ Give affirmations and compliments to one another to recognize contributions.
 - ▶ Express gratitude to others and the group.
 10. It is key to do this sincerely to create as strong of a group as we can.
 - ▶ Have you ever experienced how a bad apology hurts worse than no apology at all? The same thing can happen with feigned inclusion and respect. If you can't do it sincerely, then it might be better to not do anything.
 11. Think about this and practice this today! This is not just for kitchen. This is for life.
 12. Split up into cooking jobs.
 13. Cook.
 14. Eat. A good topic for conversation during this lesson is group dynamics and reviewing their group decision-making process.
 15. Clean up.

3 AT THE CLOSING

1. Ask students to rate the food using their fingers from 1 to 5.
2. If there's time, reflect on discussion from the small table groups. Encourage students to continue reflecting on their group decision-making process.

Vocabulary

- ▶ Sauté
- ▶ Roast
- ▶ Steam
- ▶ Inclusivity
- ▶ Paraphrase

Teaching Notes

Iron Chef prep: We developed this lesson as the final seventh-grade lesson before Iron Chef, the culminating challenge of the seventh grade year in the kitchen. In Iron Chef, students plan, prepare, and serve a meal using surprise ingredients, no recipes, and no adult help. We found that this lesson was a great practice run for Iron Chef because it clearly lays out three cooking methods that students report feeling more confident improvising with after the lesson, and also provides them with the opportunity to practice making group decisions and cooking without recipes.

Referencing previous cooking lessons: We have found that one way to encourage independence and confidence with the cooking methods for this lesson is to prompt students to recall previous dishes they made in the kitchen and connect each dish with the corresponding cooking method. Once students have the memory of how they made something, they feel much more equipped to repeat the process with little to no guidance.

Scaffolding the experience: Our goal with this lesson is for groups to work independently from adult help, but different groups require different kinds of support to make this lesson successful. The role of the teacher here is to carefully observe each individual group and provide support where needed, encouraging independence and team collaboration as much as possible.

Group dynamics: Though we step back from the cooking process in this lesson, we make sure to be intentional about stepping in when group dynamics aren't working. One technique we often use here is simply to name what we're seeing. (E.g., when all the female students are working on cleaning up and the male students have sat down and are waiting for the meal to begin: "I'm seeing that who is cleaning and who isn't is falling along gender lines. Let's change that.")

Time management: This is an excellent lesson to help students communicate with one another to coordinate the timing of all their dishes. We introduce this as a central part of the lesson and tell students that this serves as excellent practice for Iron Chef.

Steamer basket: Many of our students were unfamiliar with using steamer baskets, so we started introducing it as part of the Chef Meeting.

Vegetable prep and cooking time: This lesson is a great time to remind students that the size and shape of each vegetable will affect the cooking time and outcome. Encourage them to consider this when choosing how to cut their vegetables.

Tasting and seasoning: Encourage students to taste and season as they go to get a sense for how each cooking method impacts flavor and texture. We often tell students that when roasting, you generally season before cooking; when sautéing, you generally season while cooking; and when steaming, you generally season after cooking.

Reflecting on team dynamics: After the cooking period in this lesson, we always facilitate group reflection and discussion at the table about how the team worked together and made decisions. Encourage students to reflect on what went well and what didn't go as well as it could. What could they do differently as a group to improve on their teamwork for Iron Chef?

Asparagus: Show students how to cut the dry, tough bottoms off the asparagus. Make sure they know the tops of the spears are edible—we were surprised how many of our students threw both the tops and bottoms in the compost at first.

Ranch: This recipe ended up being a big hit with our students despite initial skepticism on the part of many.

No right or wrong answers: Deciding how to cook the vegetables can sometimes feel a little overwhelming. Assure students that there is no right or wrong way to cook the vegetables.

Pride in independence: Students really feel a sense of pride when they complete a cooking class largely without teacher assistance.

Growth through failure: Conversely, when groups don't succeed they often jump to critical self-reflection and learn much more quickly than if told by a teacher. This happened frequently with clean-up and having lots of dishes left over. Providing space for some failure can be an incredibly effective teaching technique.

☑ Connections to Standards

COMMON CORE, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 7

- SL.7.1.b.** Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.7.1.c.** Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.
- SL.7.1.d.** Acknowledge new information expressed by others and, when warranted, modify their own views.
- RH.6-8.7.** Integrate visual information with other information in print and digital texts.

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN, 7TH GRADE

- 2.1.3** Select correct knives from the ESY Toolbox. Refine knife skills by using different cuts and sizes while demonstrating knife safety and care.
 - 2.2.4** Understand the versatility of ingredients, and realize that certain ingredients are available in particular seasons.
 - 2.2.5** Execute an increasing variety of techniques, begin to choose the correct technique for each job, and discuss reasons to use different techniques.
 - 2.2.6** Read and follow recipes with increasing skill, begin to recognize when alterations or adjustments are possible, and improvise recipes when ingredients are provided.
 - 2.2.7** Refine tasting skills and adjust seasoning, compare and contrast different recipes in conversation using more advanced descriptive vocabulary.
-

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.



WHERE: HOT OVEN (375°- 425°)

HOW: SINGLE LAYER,
ON A SHEET PAN



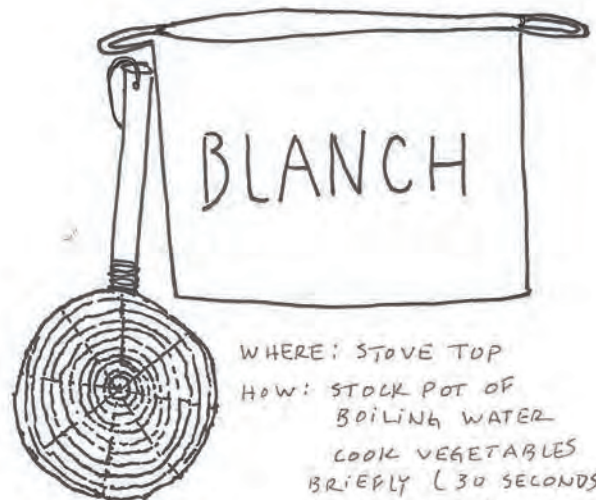
WHERE: STOVE TOP

HOW: IN STEAMER BASKET
OVER BOILING WATER
WITH LID ON POT



WHERE: IN SKILLET ON STOVE TOP

HOW: COOK IN OIL OR BUTTER




WHERE: STOVE TOP


HOW: STOCK POT OF
BOILING WATER
COOK VEGETABLES
BRIEFLY (30 SECONDS
TO 3 MINUTES)


SHOCK IN ICE WATER


Ranch Dressing


 Peel 1 SMALL CLOVE GARLIC

 Pick the leaves from 3 SPRIGS FRESH THYME

 In a mortar and pestle grind to a paste the peeled garlic, thyme leaves and a pinch of salt.

 In a bowl, mix together the garlic-herb paste and
1 CUP MAYONNAISE
1 CUP BUTTERMILK

 Whisk until smooth, then season to taste with
SALT
PEPPER

 Use as a dip, salad dressing, or to bring your sandwich to the next level.

Iron Chef

Summary

In this seventh-grade creative assessment, students work in groups to plan and prepare a meal using a surprise set of ingredients without adult help. Guest judges from the school and local food community observe and evaluate their work, provide feedback to each team, and award honors in various categories.

Objectives

After this lesson, students will be able to:

- ▶ Work independently from adult help and collaboratively with peers to plan and prepare a meal.
 - ▶ Progress into the eighth grade with mastery of the tools, techniques, and concepts introduced in the seventh grade.
 - ▶ Reflect on their personal level of mastery of the skills and techniques taught in the kitchen classroom and on their own strengths and learning edges.
-

Assessments

During this lesson, students will:

- ▶ Work with their team, without adult help, to plan and prepare a meal.
 - ▶ Demonstrate mastery of the sixth- and seventh-grade Edible Schoolyard kitchen standards for tools, techniques, and concepts.
 - ▶ Apply their knowledge of skills and techniques and assess their contributions to the team, including their strengths and learning edges.
-

Materials

	INGREDIENTS	TOOLS	EQUIPMENT
<input checked="" type="checkbox"/> Visual aid	<input checked="" type="checkbox"/> A mix of ingredients that students have used throughout the seventh-grade lessons	<input checked="" type="checkbox"/> All tools in the toolbox and cooking stations that students have used throughout the seventh-grade lessons	<input checked="" type="checkbox"/> Blender or immersion blender
<input checked="" type="checkbox"/> Iron Chef rules			<input checked="" type="checkbox"/> Stove
<input checked="" type="checkbox"/> Iron Chef ballot			<input checked="" type="checkbox"/> Oven

BEFORE YOU BEGIN

- ☑ Create the visual aid.
 - ☑ Print out the Iron Chef rules.
 - ☑ Prepare the Iron Chef ballot.
 - ☑ Recruit judges and review the Iron Chef ballot.
 - ☑ Collect all the ingredients and distribute them to the tables.
 - ☑ Cover the ingredients with a tablecloth so they are hidden.
 - ☑ Set up the Wild Card table with common pantry ingredients (butter, eggs, yogurt, potatoes, bread, soy sauce, milk, tortillas, rice, cheese, etc.).
-

Procedures

1 AT THE CHEF MEETING

1. Meet the students outside the kitchen classroom and inform them that instead of meeting around the middle table for the Chef Meeting, students will wash their hands and go straight to their table.
2. Welcome students to the grand finale of their seventh-grade experience in the kitchen—the Iron Chef competition!
3. Share the Iron Chef rules and answer questions from students.
4. Introduce the three judges and explain the scoring system. Each judge will observe all three tables and award them a score out of 10 for each ballot category: group brainstorming and menu planning, safety, hygiene, clean as you go, mastery of kitchen terminology, mastery of kitchen skills and techniques, presentation, taste, and cooperation. Stress that out of all the categories, the majority of points will be awarded for group brainstorming and menu planning, cooperation, presentation, and taste.
5. Explain that after the food is prepared and the table is set, judges will visit each table one at a time, and that the students will eat when the third and final judge visits their group. The judges may ask any manner of questions about the food, so groups should be prepared to talk about the food they make, as well as the process of making it.
6. Judges will tally up the scores while the class busses their dishes. Students will clean all the tools and materials they use for cooking. Teachers will be washing the dishes.
7. At the end of the competition, winners in the individual categories of presentation, taste, and cooperation will be announced along with an overall winner.
8. Answer students' questions.
9. Tell students they have 45 minutes remaining; unveil the ingredients and begin.

2 AT THE TABLE

1. Students work with their table groups to brainstorm menu options. Judges observe and take notes.

2. Students divide cooking jobs, collect their chosen wild card items, and prepare their dish(es). Students are expected to clean as they go.
3. Every 10 minutes, call out the remaining time.
4. When the time is up, have judges rotate through the tables to taste the food. Students introduce, explain, and list the ingredients of each dish to all the judges.
5. Students serve themselves and eat with the last judge to visit their group.
6. Students bus their dishes and finish cleaning while the judges tally their scores. Students return to their table to hear the results.

3

AT THE CLOSING CIRCLE

1. Students remain with their teams while the judges announce the winners in the categories of taste, cooperation, and presentation, as well as the overall winner.

Vocabulary

- ▶ Challenge
- ▶ Assessment

Teaching Notes

Creative Assessment - This lesson is a great way for us as teachers to reflect on how we're doing. By stepping back and allowing students to work entirely independently, we are able to observe what they know, what skills they have mastery over, how they work together, and in which areas students have not met our learning objectives. These observations are invaluable to informing our development as teachers.

Lost Skills - Over the years, a few of the skills we have noticed students are missing when we get to Iron Chef are: how to turn the stove on, remembering to preheat the oven, how to turn the oven on and set the temperature, knowing where the pots and pans are, knowing where to find extra paper napkins, remembering to use oil or another fat when sautéing, knowing that oil or fat will burn if left in a heated pan too long without any other foods, and a mastery of hygienic tasting technique. When we notice patterns of deficit emerge, we are able to intentionally structure those skills into our lessons the following year. Many of the skills that we find lacking are things that we often do for our students and forget to explain to them what we are doing and why.

Iron Chef Ramp-up - This year we developed all four lessons in the 7th grade spring rotation (Tortilla Scramble, Udon Noodle Soup, Maki Sushi, Sauté Roast Steam) with Iron Chef in mind. Specifically, we wanted to support our students in working together well as a team (with a focus on inclusivity, self-awareness as strategies for effective collaboration), and being able to work independently with a variety of cooking techniques. We were very pleased with how this specific lead-up to Iron Chef resulted in teams that operated very

capably and collaborated at high levels. We especially noticed how useful the Sauté, Roast, Steam lesson was in helping students gain mastery and confidence with a variety of cooking techniques and effective group decision-making.

Ham it Up! - The Iron Chef lesson is modeled off of cooking shows on TV. We always ham up the introduction like a TV show, which students tend to find very amusing.

Visual Aid - We found that including representations of all the recipes students had cooked throughout the year seemed helpful for jogging students' memories of recipes and techniques they had practiced. We also put up a simple visual aid of cooking techniques to help students remember their options for cooking vegetables.

Reflection Cards - This year we created large versions of the Reflection Card decks from our toolboxes to hang as decorations in the Kitchen classroom. We structured the lessons leading up to Iron Chef to provide opportunities for groups to practice the skills associated with each card, and spent time during each lesson explicitly reflecting on how that practice had gone. These cards became the categories in which Iron Chef teams were evaluated by the guest judges. We liked how this worked because students were already familiar with what they were being evaluated in and were able to refer to the large versions hanging in the room as reminders.

Flexible Scoring - This year we didn't impose a pre-decided structure for how the scoring of Iron Chef would go. Sometimes we awarded each group a 'win' in a different category; sometimes we awarded an overall winner; sometimes we included honorable mentions; and other times judges simply provided specific feedback to each group. We liked how this kind of flexibility allowed the scoring and feedback to be judge- and class-specific, resulting in what felt like more meaningful and satisfying learning experiences for our students.

Students with Aides - Though the lesson is a chance for students to operate independently from adult help, students with aides continue to work with their aides in this lesson so that they are able to participate fully.

Garden - We give students free access to the garden to harvest flowers and other herbs throughout the cooking period.

Judges - We like to have all three judges float for the full class as opposed to staying with specific groups. This helps to adjust for discrepancies in judging style and scoring, and also creates a very enjoyable experience for the judges and students. Judges are always very excited to see all three groups, and the students are excited to get a variety of feedback.

Judges and Community-Building - We invite adults from within the school and in the broader community, especially food professionals, to be judges. It is very exciting for students to showcase their skills and share their meals with a variety of adults, and we find Iron Chef is a great opportunity to bring people from the community into our program. Judges tend to have a really enjoyable time and are blown away by how capable middle schoolers can be in the kitchen. Over the years, judges from Iron Chef have become many of our most staunch and devoted supporters.

Dietary Restrictions - we always check with our guest judges beforehand about any dietary restrictions or allergies they have. This way we can make sure that all the judges can enjoy the food our students make.

Scaffolding the experience - the goal of this lesson is for every student to engage in a fun, meaningful challenge. We vary the expectations and the support we provide to different groups in order to facilitate this.

Timing - We aim to have groups finish cooking about a half hour before the end of class. This allows for a leisurely pace while judges rotate between groups trying their food and gives them time to tally scores and give awards and feedback at the end.

Performance Anxiety - This idea of this lesson can feel stressful for some students. Each year we work on figuring out ways to be sensitive to that while maintaining the level of excitement and competition that many of our students find so fun. Generally, it is not hard to see who feels stressed when they walk in for class. Check in with them and reassure them that the competition isn't the important part. In our experience, even students who feel anxious before the lesson begins have a really enjoyable time once it starts. Adequate preparation (both in cooking skills and collaboration skills) is very important for this challenge feeling enjoyable to students.

Connections to Standards

COMMON CORE, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 7

- SL.7.1.b.** Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.7.1.c.** Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.
- SL.7.1.d.** Acknowledge new information expressed by others and, when warranted, modify their own views.

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN, 6TH GRADE

- 2.1.1** Identify basic tools at the ESY Cooking Station and use and care for them with guidance.
- 2.1.2** Identify measuring tools from the ESY Toolbox and follow instructions to use and care for them.
- 2.1.3** Identify different knives from the ESY Toolbox and demonstrate basic knife skills, safety, and care with guidance.
- 2.2.4** Identify ingredients by name, and discuss them using descriptive words in conversation.
- 2.2.5** Use basic techniques as instructed, and refer to them by name in conversation.
- 2.2.6** Read and follow recipes, and understand that some recipes are flexible and some are specific.
- 2.2.7** Taste finished dishes and discuss their sensory observations using descriptive vocabulary.

EDIBLE SCHOOLYARD 2.0 IN THE KITCHEN, 7TH GRADE

- 2.1.1 Use and care for tools and equipment at the ESY Cooking Station, and begin to choose the right tool for each.
- 2.1.2 Begin to select correct measuring tools from the ESY Toolbox and recognize the need for precision in measuring.
- 2.1.3 Select correct knives from the ESY Toolbox. Refine knife skills by using different cuts and sizes while demonstrating knife safety and care.
- 2.2.4 Understand the versatility of ingredients, and realize that certain ingredients are available in particular seasons.
- 2.2.5 Execute an increasing variety of techniques, begin to choose the correct technique for each job, and discuss reasons to use different techniques.
- 2.2.6 Read and follow recipes with increasing skill, begin to recognize when alterations or adjustments are possible, and improvise recipes when ingredients are provided.
- 2.2.7 Refine tasting skills and adjust seasoning, compare and contrast different recipes in conversation using more advanced descriptive vocabulary.

EDIBLE SCHOOLYARD IN THE KITCHEN, CONCEPTS, 6-8TH GRADE

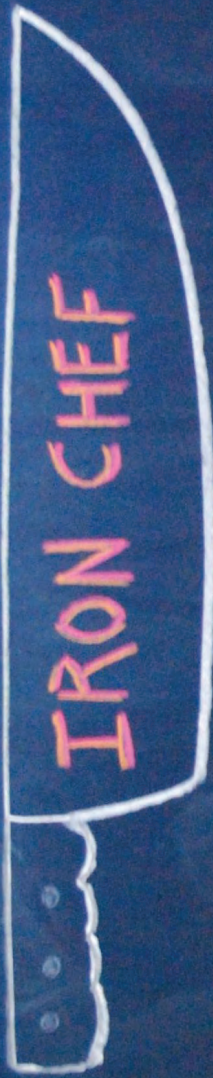
- 2.3.8 Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.
- 2.3.9 Collaborate to identify, choose, and complete jobs to execute recipes, and explain the importance of each individual contribution to the end result.
- 2.3.10 Fully engage their senses and use descriptive vocabulary to discuss sophisticated observations, situations, events, moods, and other subjects including and beyond food.
- 2.3.11 Make connections between the diets of different cultures throughout history and 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.

Resources

- Iron Chef Visual Aid
- Iron Chef Rules
- Iron Chef Ballot



COOPERATION - MAX 20 POINTS
CLEAN AS YOU GO - MAX 10 POINTS
SAFETY + HYGIENE - MAX 10 POINTS

ORIGINALITY + PRESENTATION MAX 10 POINTS (X3)
TASTE MAX 10 POINTS (X3)
KNOWLEDGE OF FOOD MAX 10 POINTS (X3)



TOTAL MAX 130

Rules for the Iron Chef Competition

1. Each table is competing against the other two tables and will have 45 minutes to plan and execute their menu.
2. Every table has identical secret ingredients, plus unlimited access to the spice table, onions, garlic, and olive oil.
3. A portion of all ingredients on the platter must be used.
4. Explain that from the Wild Card Table, each group can use one starch (e.g. bread OR potatoes) and a choice of two other ingredients (e.g. soy sauce and milk).
5. Adults will not be available for any advice, ideas, direction, or reminders.
6. Teachers will announce the time remaining throughout the period.
7. When the time is up, cooking stations should be clean and the tables must be set. Tables should include three place settings for the judges.



JUDGING BALLOT

CATEGORY	MAXIMUM POINTS	TABLE TEAMS		
		BLUE	RED	GREEN
GROUP BRAINSTORM AND MENU PLANNING	20			
SAFETY	10			
HYGIENE	10			
CLEAN AS YOU GO	10			
MASTERY OF KITCHEN TERMINOLOGY (CAN IDENTIFY TOOLS AND INGREDIENTS)	10			
MASTERY OF KITCHEN SKILLS AND TECHNIQUES	10			
PRESENTATION	20			
TASTE	30			
COOPERATION	30			
TOTAL POINTS				

ROTATION 1 - FALL					
LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K8 - 1 (85-105 Min)	Spaghetti with Pesto, Ricotta Cheese, and Quick Tomato Sauce	Independence Series: Practicing teamwork and collaboration with a focus on group decision-making	<ul style="list-style-type: none"> ▶ Basil ▶ Garlic ▶ Tomatoes 	<p>ESY Standards 2.0 In the Kitchen, Grade 8: 2.1.1. Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently. 2.2.6. Read and follow recipes, customize recipes when alterations and adjustments are possible, and improvise recipes after choosing seasonal ingredients. 2.2.7. Demonstrate mastery of tasting and seasoning skills based on sensory observations, identify and recreate flavors from different countries and cultures covered in previous lessons.</p>	<p>Common Core (CCSS.ELA) SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly. SL.8.1. b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed. L.8.4.a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. RST.8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
<p>K8 – 2 (85-105 Min)</p>	<p>Spring Rolls</p>	<p>Independence Series: Practicing experimentation and improvisation with flexible recipes</p>	<ul style="list-style-type: none"> ▶ Basil ▶ Cilantro ▶ Cucumbers ▶ Mint ▶ Summer squash ▶ Zucchini 	<p>ESY Standards 2.0 In the Kitchen, Grade 8: 2.1.1. Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently. 2.1.3. Demonstrate mastery of knife skills, safety and care using knives from the ESY Toolbox. 2.2.4. Demonstrate a working knowledge of ingredients, understand and explain seasonality, and identify which ingredients are grown in particular seasons. 2.2.6. Read and follow recipes, customize recipes when alterations and adjustments are possible, and improvise recipes after choosing seasonal ingredients. 2.2.7. Demonstrate mastery of tasting and seasoning skills based on sensory observations, identify and recreate flavors from different countries and cultures covered in previous lessons.</p>	<p>Common Core (CCSS.ELA) SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others’ ideas and expressing their own clearly. SL.8.1.b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed. L.8.4.a. Use context (e.g., the overall meaning of a sentence or paragraph; a word’s position or function in a sentence) as a clue to the meaning of a word or phrase. RST.8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K8 – 3 (85–105 Min)	Eggs, Potatoes, Homemade Ketchup and Herbal Tea	Independence Series: Practicing teamwork and collaboration with a focus on group timing and coordination	<ul style="list-style-type: none"> ▶ Eggs ▶ Potatoes ▶ Onions ▶ Garlic ▶ Assorted herbs ▶ Tea herbs 	<p>ESY Standards 2.0 In the Kitchen, Grade 8:</p> <p>2.1.1. Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently.</p> <p>2.1.3. Demonstrate mastery of knife skills, safety and care using knives from the ESY Toolbox.</p> <p>2.2.4. Demonstrate a working knowledge of ingredients, understand and explain seasonality, and identify which ingredients are grown in particular seasons.</p> <p>2.2.5. Demonstrate mastery of a wide variety of cooking techniques, reliably choose the right technique for each job, and compare and contrast technique differences in conversation.</p> <p>2.2.6. Read and follow recipes, customize recipes when alterations and adjustments are possible, and improvise recipes after choosing seasonal ingredients.</p>	<p>Common Core (CCSS.ELA)</p> <p>SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others’ ideas and expressing their own clearly.</p> <p>SL.8.1.b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.</p> <p>L.8.4.a. Use context (e.g., the overall meaning of a sentence or paragraph; a word’s position or function in a sentence) as a clue to the meaning of a word or phrase.</p> <p>RST.8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p>

ROTATION 2 - SPRING					
LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K8 – 4-9 (45-90 Min)	—	Debate Plate: Introduction to Food System Issues in the academic classroom	—	<p>ESY Standards 1.0 In the Edible Schoolyard</p> <p>Program:</p> <p>Tools 1.1. Engage in structured groups to complete tasks and practice teamwork.</p> <p>Tools 1.2. Make positive contributions to small group discussions.</p> <p>Tools 1.3. Communicate relevant questions to classmates; build language and listening skills by practicing self-control, self-awareness, and noticing our impact on others.</p>	<p>Common Core: ELD & Literacy</p> <p>RSI.8.2. 2. Determine a central idea of a text and analyze its development over the course of the text; including its relationship to supporting ideas; provide an objective summary of the text.</p> <p>SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.</p> <p>SL.8.4 Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
<p>K8 – 4 (105 Min)</p>	<p>Red Lentil Stew with Spiced Cabbage Slaw</p>	<p>Debate Plate: Health and Nutrition Reflecting on personal relationships to food and exploring the themes of health and balance in relationship to food</p>	<ul style="list-style-type: none"> ▶ Carrots ▶ Cabbage ▶ Cilantro 	<p>ESY Standards 2.0 In the Kitchen, Grade 8:</p> <p>2.1.1. Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently.</p> <p>2.1.2. Select measuring tools from the ESY Toolbox to measure precisely and convert measurements.</p> <p>2.3.8. Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.</p>	<p>Common Core: ELD & Literacy</p> <p>2.3.9. Collaborate to identify, choose, and complete jobs...</p> <p>SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.</p> <p>SL.8.1.d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.</p> <p>SL.8.4. Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. CA</p> <p>RST 6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p> <p>RST 6-8.10. By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
<p>K8 – 5 (105 min)</p>	<p>Frittata with Salad</p>	<p>Debate Plate: Environment The relationship between food choices and the environment; food waste and water use</p>	<ul style="list-style-type: none"> ▶ Mix of seasonal vegetables ▶ Lettuce ▶ Herbs ▶ Eggs 	<p>ESY Standards 2.0 In the Kitchen, Grade 8:</p> <p>2.1.1. Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently.</p> <p>2.2.6. Read and follow recipes, customize recipes when alterations and adjustments are possible, and improvise recipes after choosing seasonal ingredients.</p> <p>2.2.7. Demonstrate mastery of tasting and seasoning skills based on sensory observations, identify and recreate flavors from different countries and cultures covered in previous lessons.</p> <p>2.3.8. Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.</p> <p>2.3.9. Collaborate to identify, choose, and complete jobs to execute recipes, and explain each individual contribution to the end result.</p>	<p>Common Core: ELD & Literacy</p> <p>SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.</p> <p>SL.8.1.b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.</p> <p>SL.8.1.d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.</p> <p>SL.8.4. Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. CA</p> <p>RST 6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p> <p>RST 6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
<p>K8 – 6 (85 min)</p>	<p>—</p>	<p>Debate Plate: Justice and Labor in the academic classroom Introduction to justice and labor issues in the food system;</p>	<p>—</p>	<p>ESY Standards 2.0 In the Kitchen, Grade 8: 1.1 Engage in structured groups to complete tasks and practice teamwork. 1.2 Make positive contributions to small group discussions. 1.3 Communicate relevant questions to classmates; build language and listening skills by practicing self-control, self-awareness, and noticing our impact on others.</p>	<p>Common Core: ELD & Literacy RSI.8.2. 2. Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text. SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others’ ideas and expressing their own clearly. SL.8.1.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.8.1.b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed. SL.8.4 Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. SL.8.5. Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest RST 6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
K8 – 7 (90 min)	Broccoli Mac'n'cheese with Lemonade	Debate Plate: Justice and Labor Tracking consumer dollars in the food system, exploring the impacts of our food choices on other people, and debating the concept of consumer responsibility	<ul style="list-style-type: none"> ▶ Broccoli ▶ Garlic ▶ Lemons ▶ Rosemary 	<p>ESY Standards 2.0 In the Kitchen, Grade 8:</p> <p>2.1.1. Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently.</p> <p>2.3.8. Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.</p> <p>2.3.9. Collaborate to identify, choose, and complete jobs to execute recipes, and explain each individual contribution to the end result.</p>	<p>Common Core: ELD & Literacy</p> <p>SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.</p> <p>SL.8.1.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.</p> <p>SL.8.1.b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.</p> <p>SL.8.4 Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.</p> <p>RSH 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.</p> <p>RST 6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p> <p>RST 6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).</p>

LESSON #	RECIPE	MAIN FOCUS	FROM THE GARDEN	ESY STANDARD	ACADEMIC CONNECTION
<p>K8 – 8 (90 min)</p>	<p>Vegetarian Chili with Cornbread</p>	<p>Debate Plate: Cost and Access Food access as a social justice issue and considering how issues of health, environment, and labor interact and are affected by our food choices</p>	<ul style="list-style-type: none"> ▶ Carrots ▶ Cilantro ▶ Eggs ▶ Garlic ▶ Green onions 	<p>ESY Standards 2.0 In the Kitchen, Grade 8:</p> <p>2.1.1. Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently.</p> <p>2.1.2. Select measuring tools from the ESY Toolbox to measure precisely and convert measurements.</p> <p>2.3.8. Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.</p> <p>2.3.9. Collaborate to identify, choose, and complete jobs to execute recipes, and explain each individual contribution to the end result.</p>	<p>Common Core: ELD & Literacy</p> <p>SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others’ ideas and expressing their own clearly.</p> <p>SL.8.1.b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.</p> <p>SL.8.4 Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.</p> <p>RST 6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p>

Independence Series Lesson 1:

Spaghetti with Pesto, Ricotta Cheese, and a Quick Tomato Sauce

Summary

In this eighth-grade humanities lesson, students prepare spaghetti with pesto, ricotta cheese, and a quick tomato sauce. Students discuss the theme of seasonality, and build their independence in the kitchen by working as a team to identify and divide cooking jobs and coordinate timing as they cook.

Objectives

After this lesson, students will be able to:

- ▶ Identify cooking jobs necessary to complete a recipe by referring to a written recipe or verbal description of the cooking process.
 - ▶ Work as a group to distribute cooking jobs between all group members so that every group member is satisfied with their assigned task.
 - ▶ Carry out individual cooking tasks with an understanding of how those tasks fit into the larger group goal: creating the meal. Specifically, students will be able to time the completion of their cooking tasks in relation to the timing of other groups.
-

Assessments

During this lesson, students will:

- ▶ Work with their table groups to identify the cooking jobs necessary to complete the meal by referring to the written recipe and verbal description of the cooking process given by the teacher.
- ▶ Break up jobs between themselves independent from adult help. Teachers will prompt for awareness of self and others, and a more inclusive group process if every group member is not initially satisfied with their assigned task.
- ▶ Coordinate across recipes to complete each component of the meal at the optimal time.

Materials

FOR THE CHEF MEETING

- Fresh Tomato Topping recipe
- Pesto recipe
- Ricotta Cheese recipe
- Ingredients and tools for demonstration
- Visual aid

INGREDIENTS

- Spaghetti
- ## FOR THE FRESH TOMATO TOPPING
- Fresh tomatoes
 - Fresh basil
 - Olive oil
 - Salt
 - Pepper

FOR THE PESTO

- Garlic
- Fresh basil
- Salt
- Pepitas (pumpkin seeds)
- Parmesan cheese
- Olive oil

FOR THE RICOTTA CHEESE

- Whole milk
- Heavy cream
- Lemon juice or white vinegar
- Salt

TOOLS

FOR THE SPAGHETTI

- Heavy-bottomed pot
- Colander
- Mixing bowl
- Tongs (for serving)

FOR THE FRESH TOMATO TOPPING

- Cast-iron skillet
- Wooden spoon
- Chef's knives
- Paring knives
- Cutting boards
- Measuring spoons (optional—for the olive oil)

FOR THE PESTO

- Cast-iron skillet (optional, to toast the pepitas on the stovetop)
- Sheet pan (optional, to toast the pepitas in the oven)
- Mortar and pestle
- Chef's knives
- Paring knives
- Cutting boards
- Measuring cups
- Measuring spoons

FOR THE RICOTTA CHEESE

- Heavy-bottomed pot
- Sieve
- Cheese cloth or kitchen towel (for straining the curds from the whey)
- Wooden spoon
- Measuring cups
- Measuring spoons

EQUIPMENT

- Stove
- Oven (optional, to toast the pepitas in the oven)

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.
- Copy the Fresh Tomato Topping recipe to hand out.
- Copy the Pesto recipe to hand out.
- Copy the Ricotta Cheese recipe to hand out.

Procedures

1 AT THE CHEF MEETING

1. Welcome students back to the kitchen. Explain that this is the first of three kitchen lessons they'll have this fall. These three lessons will focus on the themes of seasonality and independence in the kitchen.
2. Describe how, over the course of these three lessons, as teachers we'll be looking for the students to develop even more independence over the cooking process. This means that not only will we expect them to be doing all the physical work of cooking and cleaning, but we'll also be looking for them to do more of the mental work.
3. Ask students: What do you think I mean when I say we want you to do more of the "mental work" in the kitchen?
 - ▶ That means figuring out what jobs need to be done, dividing up work within their groups, and coordinating with one another to make sure everything gets done in a timely way.
4. Increased independence in the cooking process will also require more sophisticated collaboration skills. Explain that as teachers, we pay a lot of attention to how the process of splitting up jobs feels, and always aim for fairness—we want every group member to feel seen, heard, and excited to be part of the group. Encourage students to pay attention to group dynamics as they work with one another—is everyone's voice being heard? Does everyone in the group seem content with the group process? If not, encourage students who may be talking a lot to step up their listening, and seek to include the voices of those who aren't being heard.
5. Ask if there are any students who love cheese. Explain that today we'll be making a very simple, very delicious fresh cheese called ricotta. In addition, we'll be making spaghetti, and a fresh tomato sauce and basil pesto. Explain that fresh tomato sauce and pesto are highly seasonal recipes that make use of the late summer harvest.
6. Ask students to wash their hands and break into their table groups.

2 AT THE TABLE

1. Small-group check-in: If you could have an unlimited supply of one fruit or vegetable growing in a garden near you, what would it be? What is your favorite way to eat pasta or noodles?
2. Explain that today students will separate themselves by recipe and be responsible for dividing up jobs within their recipe groups. Note that because there are three recipes that require the stovetop at some point and only two burners, they may have to coordinate timing between groups to make sure all the food gets cooked. Also note that the pasta shouldn't get cooked until later on in class, so that it doesn't end up getting cold before eating. Emphasize that all the information students need about how to prepare the dishes appears on the recipes—both the ingredients and the directions—so reading the recipe closely, and communicating between groups, will be key to successfully preparing the meal.

3. Turn it over to the students to break into groups by recipe.
4. Prepare the recipes. Offer support where needed.
5. Set the table and eat. While eating, debrief with the group on how the team worked together. Brainstorm other possible toppings for spaghetti or other foods they could eat with pesto, ricotta, and tomato sauce.
6. Clean up.

3

AT THE CLOSING CIRCLE

1. Students rate the food on a scale of 1 to 5.
2. If there is time, have students share other foods they could make with pesto, ricotta, and tomato sauce. Alternately, have students share a secret talent that they have.

Teaching Notes

Teamwork and independence in the kitchen: This was the first lesson back in the kitchen for our eighth-grade students after the summer. As such, our main goals in this lesson were to reorient them to the space, reemphasize the importance of teamwork and collaboration in kitchen class, and start setting them up to work with less direct support from the teacher in all of their coming lessons.

Dividing up the jobs: In general, we took a very hands-off approach to this process, allowing students to negotiate among themselves how they divided the work—often, just when it reached the point that we'd be tempted to intervene to make sure that everyone's voice and needs were being heard, the students would self-regulate and bring in quieter voices or adopt a more consensus-based way of decision-making. If it seemed as if some voices were overly dominant or there were students whose needs and preferences were being overlooked entirely, we tended to intervene with a specific reminder to exercise self and group awareness ("Have we heard from everyone in the group about their preference for a job?").

Timing: This is an excellent lesson to prompt students to think about the timing of the meal, especially because pasta is something many of them will be familiar with cooking.

Making the pesto: The students making pesto will often need prompting to realize that making pesto in small batches instead of all at once will yield a more even texture. If they do make the pesto in small batches, you can also remind them that exact proportions of each ingredient are not necessary in each batch because it will all be mixed together in the end.

Making the tomato sauce: Because our main goals in this lesson were building independence and teamwork, we offered the students the option of cooking the tomato sauce or keeping it raw.

Making the ricotta cheese: The students were very excited going into this lesson about the prospect of making cheese. The first few times we taught this lesson, a number of our

students didn't enjoy the texture and consistency of the ricotta cheese. We found that modeling enthusiasm and interest in the transformation of milk to curds and whey with the addition of the acid, and explaining the chemistry behind the change, encouraged our students to show the same curiosity and made the ricotta more popular. Making sure to add enough salt was also crucial to making a delicious cheese that would be popular with the students.

Cooking the pasta: Pasta should be cooked about 20 minutes before the group eats. Too early, and it will get cold and soggy.

Straining pasta: This job can be difficult and feel scary to some students. Offer to assist or support if necessary.

Vocabulary

- ▶ Seasonality
- ▶ Acid
- ▶ Curd
- ▶ Curdle
- ▶ Ricotta
- ▶ Sieve
- ▶ Whey

☑ Connections to Standards

CALIFORNIA COMMON CORE STATE STANDARDS ENGLISH LANGUAGE ARTS AND LITERACY IN HISTORY/SOCIAL STUDIES, SCIENCE AND TECHNICAL SUBJECTS (CCSS.ELA)

SPEAKING AND LISTENING STANDARDS

- SL.8.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- SL.8.1.b.** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.

LANGUAGE STANDARDS

- L.8.4.a.** Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.

READING STANDARDS FOR LITERACY IN SCIENTIFIC AND TECHNICAL SUBJECTS

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

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.



- 1 POUND FRESH TOMATOES
(THEY CAN BE ALL ONE TYPE OR DIFFERENT VARIETIES)
- 2-3 SPRIGS FRESH BASIL
- 1-2 TABLESPOONS EXTRA VIRGIN OLIVE OIL
- SALT AND PEPPER TO TASTE

WASH AND DRY THE TOMATOES AND THE BASIL. CUT THE TOMATOES INTO SMALL DICE AND PLACE IN A MEDIUM MIXING BOWL. CUT OR TEAR THE BASIL LEAVES INTO SMALL PIECES AND ADD TO THE TOMATOES. ADD THE OLIVE OIL AND STIR GENTLY. ADD SALT AND PEPPER TO TASTE.

VARIATIONS: YOU COULD ADD PARSLEY, OREGANO, MINT OR THYME. FRESH HERBS ARE THE BEST FOR THIS RECIPE. VINEGAR, LEMON JUICE OR LEMON ZEST ALL ADD MORE FLAVOR. FRESH MOZZARELLA, CAPERS OR ANCHOVIES ARE ALSO TRADITIONAL ADDITIONS.

Pesto



- 2 SMALL CLOVES GARLIC - PEELED
- 1 TEASPOON SALT
- 2 TABLESPOONS RAW PEPITAS - LIGHTLY TOASTED IN A DRY SKILLET OVER MEDIUM HEAT
- 6 TABLESPOONS GRATED PARMESAN CHEESE
- 2 CUPS BASIL LEAVES - WASHED AND DRIED
- 1 CUP EXTRA VIRGIN OLIVE OIL

- USING THE MORTAR AND PESTLE, POUND THE GARLIC AND SALT INTO A PASTE
- ADD THE TOASTED PEPITAS AND CONTINUE TO POUND
- ADD THE PARMESAN CHEESE AND MIX TO COMBINE. TRANSFER THIS MIXTURE TO A BOWL.
- COARSELY CHOP THE BASIL LEAVES AND, WORKING IN SMALL BATCHES IN THE MORTAR, POUND TO A PASTE



- RETURN THE POUNDED PEPITA MIXTURE TO THE MORTAR
- POUND THE LEAVES AND PEPITA MIXTURE TOGETHER
- GRADUALLY ADD THE OLIVE OIL

HOMEMADE RICOTTA CHEESE

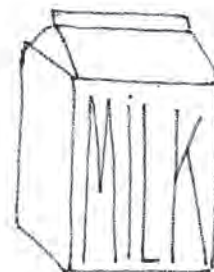
1 QUART WHOLE MILK

4 TABLESPOONS LEMON JUICE OR
WHITE VINEGAR

1/2 CUP HEAVY CREAM

SALT

COMBINE THE WHOLE MILK AND HEAVY CREAM IN A HEAVY BOTTOMED POT. HEAT OVER MEDIUM-HIGH HEAT UNTIL MIXTURE JUST BEGINS TO BOIL. TURN OFF HEAT. ADD THE LEMON JUICE (OR WHITE VINEGAR) A LITTLE AT A TIME, STIRRING GENTLY. ADD ENOUGH TO CURDLE THE MILK/CREAM MIXTURE. THE MIXTURE WILL SEPARATE INTO MILK SOLIDS (TINY, CLOUDLIKE CLUMPS) AND WHEY (A TRANSLUCENT LIQUID). LET STAND FOR 5 MINUTES. SET A FINE SIEVE, LINED WITH A CLEAN KITCHEN TOWEL, OVER A MIXING BOWL AND GENTLY LADLE THE MIXTURE INTO THE SIEVE. ALLOW TO DRAIN UNTIL THE RICOTTA CHEESE REACHES THE DESIRED CONSISTENCY. SEASON WITH SALT. RICOTTA IS A FRESH CHEESE BEST EATEN RIGHT AWAY. SERVE IT ON SLICED BAGUETTE, PASTA, CRACKERS. IT IS WONDERFUL WITH SLICED TOMATOES TOO.



Spaghetti

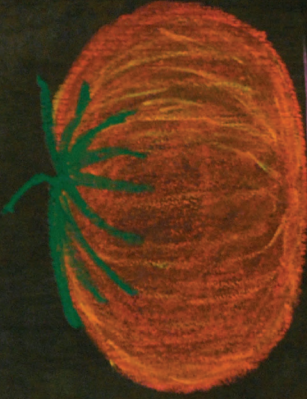
PASTA!



RICOTTA!



TOMATO!



BASIL!



Independence Series Lesson 2:

Spring Rolls

Summary

In this eighth-grade humanities lesson, students make fresh spring rolls and create their own dipping sauces. Students practice their knife skills while preparing a variety of seasonal vegetables for the spring roll filling; they hone their tasting skills and practice collaboration by working in small teams to create their own dipping sauce recipes; and they build independence and teamwork by tracking and managing the group's timing throughout class.

Objectives

After this lesson, students will be able to:

- ▶ Identify and perform a variety of cutting techniques for a variety of vegetables.
 - ▶ Create and adjust a recipe according to taste.
 - ▶ Prepare a meal as a group while managing their time without adult help.
-

Assessments

During this lesson, students will:

- ▶ Prepare a variety of vegetables as spring roll fillings using a variety of cutting techniques that they identify without direct instruction.
 - ▶ Create their own dipping sauce recipes from a variety of optional ingredients according to taste.
 - ▶ Manage their own timing in collectively preparing the meal.
-

Materials

FOR THE CHEF MEETING

- ☑ Spring Roll recipe
- ☑ Ingredients and tools for demonstration
- ☑ Visual aid

INGREDIENTS

FOR THE SPRING ROLLS

- ☑ Rice paper wrappers
- ☑ Mint
- ☑ Basil
- ☑ Cilantro
- ☑ Assorted vegetables (carrots, bell peppers, cucumbers, zucchini, summer squash, radish, fennel, cabbage, lettuce, bean sprouts, scallions, etc.)
- ☑ Vermicelli noodles or mung bean noodles
- ☑ Hoisin sauce

FOR THE DIPPING SAUCES

- Soy sauce
- Rice vinegar
- Black vinegar
- Sesame oil
- Tahini
- Plum sauce
- Black bean sauce
- Hoisin sauce
- Sriracha
- Sambal (garlic and chile sauce)
- Ginger
- Garlic
- Limes
- Lemons

TOOLS

FOR THE SPRING ROLLS

- Mixing bowls
- Chef's knives
- Paring knives
- Cutting boards
- Measuring spoons
- Baking dish (or other wide container with deep enough walls to hold warm water for soaking the rice paper wrappers)

FOR THE DIPPING SAUCES

- Chef's knives
- Paring knives
- Cutting boards
- Measuring spoons
- Small bowls
- Spoons or coffee stirrers (for tasting)
- Dropper bottles (for tasting the liquid ingredients)

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.
- Copy the Spring Roll recipe to hand out.
- Set up a station for making the dipping sauces (see Teaching Notes).

Procedures

1

AT THE CHEF MEETING

1. Welcome students back to the kitchen. Explain that today we'll continue to focus on the independence and seasonality in the kitchen through making fresh spring rolls and dipping sauces to accompany them.
2. Introduce some of the ingredients we'll be using to make the spring rolls, noting that all the vegetables we'll be using are currently in season. Have students guess what the rice paper wrappers and vermicelli or mung bean noodles are made out of. Demonstrate how both turn soft when soaked in warm water.
3. Introduce the sauce table setup and explain that the focus of this station is to practice honing your tasting skills to create a delicious dipping sauce for the spring rolls. This

will require a close attention to the flavor of each ingredient and discretion about which ones to include and in what proportions to balance the overall flavor of the sauce. Because they'll be working in small groups, note that this job will also require a high level of collaboration and potentially involve compromise. Demonstrate how to taste the sauce ingredients in a hygienic way.

4. As a final challenge to the students, each group will be in charge of managing their own time during this lesson. This means that the teacher will not be telling the group that it is time to clean up or reminding them to set the table. Instead, the group will be responsible for tracking time themselves, and managing the tasks so that everything gets done in time to eat.
5. Ask students to wash their hands and break into their table groups.

2

AT THE TABLE

1. Small-group check-in: What is your favorite kind of roll or wrap? If you could teach any skill or class, what would it be?
2. Explain that today students will separate themselves into two groups—one to prepare the fillings for the spring rolls, and one to prepare our dipping sauces. Within those groups, students will distribute work among themselves. As a table we'll make two dipping sauces, and every person will have a chance to roll two spring rolls with their fillings of choice.
3. The workflow for the day will be to first prepare the vegetables and dipping sauces, then clean off the table and set up all the ingredients to assemble the rolls. We'll assemble the rolls, then clean off the table again, set it, and eat. After, we'll clean up.
4. Explain that today, to add a further layer of independence, the group will be responsible for managing their own time. Help them come up with a timeline, working backwards from when the class ends to figure out when they'll have to start cleaning up, when they'll have to be ready to eat, and when they'll have to have finished preparing all the vegetables.
5. Turn it over to the students to break into groups by recipe. Once the groups are decided, have a student from each group volunteer to act as timekeeper.
6. Prepare the recipes. Offer support where needed.
7. Set the table and eat. While eating, have the sauce group share what ingredients went into their sauces. Brainstorm other foods that might taste good with the sauces, other sauces that might be good with the spring rolls, or other ingredients that would be good in the spring rolls.
8. At the table, the group could also discuss: What skills do you think you learn at school? What skills don't you learn at school? What skills do you learn in the kitchen in addition to cooking? What skills do you think you need to live and work independently? Is there an area in your life that you feel very independent in?
9. Clean up.

3

AT THE CLOSING CIRCLE

1. Students rate the food on a scale of 1 to 5.
2. If there is time, have students share other ingredients they could add to spring rolls. Alternately, have students share a skill they think they need to live and work independently.

Teaching Notes

The dipping sauce station: Because our focus with this lesson was on building independence in the kitchen, we elected not to provide a sauce recipe. Instead, we took this as an opportunity for students to practice their tasting skills and creativity. In order to create enough physical space for multiple groups to be working with the variety of sauce ingredients, we pulled out a separate table to set up the sauce ingredients on. In addition to the ingredients, we put two cutting boards with knives, a microplane (grater/zester), and a damp towel for wiping down the knives next to the garlic, ginger, lemons, and limes. This allowed students to prepare these ingredients at the table without having to take the ingredients elsewhere in the room or walk through the room carrying sharp knives. Finally, in order to encourage students to taste ingredients as they went in a hygienic way, we put all the liquid ingredients into small dropper bottles (soy sauce, rice vinegar, black vinegar, sesame oil), and provided coffee stirrers as tasting sticks for the thicker ingredients (plum sauce, hoisin sauce, sriracha, sambal, tahini, and bean sauce).

Assembling the spring rolls: Depending on the skill level of the group, you may either want to demonstrate how to assemble a spring roll before having the students roll their own, or have a student demonstrate based on the recipe instructions. Generally, some form of demonstration makes the rolling process much smoother and the rolls themselves much more successful. The most common pitfall that we observed in spring roll assembly was in soaking the rice paper wrappers too long—if the wrappers get too soggy, then they rip very easily. Also encourage students to use moderation in adding ingredients so they don't end up with a roll that is overfull.

Purple noodles: Our students were delighted to discover that adding sliced purple cabbage to the noodles turned them purple.

Spring roll variations: Many students will be excited and thinking about imperial rolls, egg rolls, or other deep-fried types of roll. Note that the process of making those is similar except for using a wheat-based wrapper and frying before eating.

Leftover fillings: Most classes had a fair amount of fillings left over after students had made their rolls. We mixed these leftovers in a single bowl with a simple dressing and enjoyed as a side salad with our rolls.

Sprouting mung beans: Although we didn't sprout mung beans for this lesson, it would be an excellent opportunity to do so with students. Students should start the sprouting process at least four days before they plan to make the rolls.

Vocabulary

- ▶ Black bean sauce
 - ▶ Black vinegar
 - ▶ Hoisin sauce
 - ▶ Tahini
-

☑ Connections to Standards

CALIFORNIA COMMON CORE STATE STANDARDS ENGLISH LANGUAGE ARTS AND LITERACY IN HISTORY/SOCIAL STUDIES, SCIENCE AND TECHNICAL SUBJECTS (CCSS.ELA)

SPEAKING AND LISTENING STANDARDS

- SL.8.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- b.** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.

LANGUAGE STANDARDS

- L.8.4.** Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.
- a.** Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.

READING STANDARDS FOR LITERACY IN SCIENTIFIC AND TECHNICAL SUBJECTS

- RST.8.2.** Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
 - RST.8.3.** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
-

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.

Spring Rolls

- 1 package rice paper wrappers
- 1 bunch mint, thinly sliced
- 1 bunch basil, thinly sliced
- 1 bunch cilantro, leaves only



2-3 cups assorted vegetables,
shredded or cut into matchsticks
(i.e., carrots, bell pepper, radish, etc.)

3 cups mixed greens (arugula, spinach, lettuce, etc.)

1 pack vermicelli noodles or mung bean noodles

1-2 tablespoons hoisin sauce

Fill a sheet pan with warm water. Add 1 rice paper sheet and turn until it begins to soften, about 30 seconds (sheet will be stiff in a few spots). Remove from water and place on a paper towel and pat dry.

Prepare each ingredient and place in separate bowls. Cook the noodles according to packet instructions and toss with hoisin sauce. Place the ingredients of your choice on the rice wrapper + roll!



FILL



FOLD EDGES



ROLL



EAT!

SPRING ROLLS

TYPES OF CUTS

	
MINCE	DICE
	
JULIENNE	SLICE
	
PEEL	GRATE



Independence Series Lesson 3:

Eggs and Potatoes with Homemade Ketchup and Herb Tea

Summary

In this eighth-grade humanities lesson, students make potatoes, eggs, herb tea, and homemade ketchup. Students build their independence in the kitchen by deciding as a group how they will cook their potatoes, identifying and dividing cooking jobs among the group, and coordinating group timing to prepare the meal. In this lesson, every student has the opportunity to cook an egg for themselves.

Objectives

After this lesson, students will be able to:

- ▶ Work as a group to identify a decision-making process and make a decision that impacts the group according to that process.
 - ▶ Work as a group to coordinate the preparation of multiple recipes with a specific deadline in mind.
 - ▶ Cook an egg independently.
-

Assessments

During this lesson, students will:

- ▶ Work as a group to identify a process for deciding how they will cook their potatoes, and use that process to make the decision.
- ▶ Identify a target time to be eating the meal, and coordinate the preparation of the potatoes, ketchup, tea, and eggs in order to reach that target time.
- ▶ Cook an egg for themselves according to their own tastes.

Materials

FOR THE CHEF MEETING

- Potatoes recipe
- Homemade Ketchup recipe
- Ingredients and tools for demonstration

INGREDIENTS

FOR THE EGGS

- Eggs
- Butter or oil
- Salt
- Pepper

FOR THE HOMEMADE KETCHUP

- Tomato paste
- Brown sugar
- Ground mustard seed
- Salt
- Cinnamon
- Ground clove
- Ground allspice
- Cayenne pepper
- Water
- White wine vinegar

FOR SEASONING THE HOMEMADE KETCHUP

- Garlic
- Assorted herbs
- Assorted hot sauce
- Lemons
- Limes

FOR THE POTATOES

- Potatoes
- Onions
- Bell pepper
- Garlic
- Vegetable oil
- Salt
- Pepper

FOR THE TEA

- Water
- Assorted fresh tea herbs

TOOLS

FOR THE EGGS

- Nonstick pans
- Heatproof spatula or wooden spoon
- Small mixing bowls (for preparing scrambled eggs)
- Small whisks or forks (for preparing scrambled eggs)

FOR THE HOMEMADE KETCHUP

- Mixing bowls
- Chef's knives (for preparing optional additions, i.e., fresh herbs, garlic)
- Paring knives (for preparing optional additions, i.e., fresh herbs, garlic)
- Cutting boards (for preparing optional additions, i.e., fresh herbs, garlic)
- Measuring spoons
- Can opener (if using canned tomato paste)
- Spoons (for mixing)

FOR THE POTATOES (HOME FRIES)

- Mixing bowls
- Chef's knives
- Paring knives
- Cutting boards
- Offset spatulas
- Measuring spoons
- Garlic peeler

FOR THE POTATOES (OVEN FRIES)

- Mixing bowls
- Chef's knives
- Paring knives
- Cutting boards
- Wooden spoon
- Offset spatula
- Measuring spoons
- Garlic peeler
- Oven mitts

FOR THE TEA

- Large stockpot (for heating water)
- Ladle
- Teapots
- Teacups

EQUIPMENT

- Stove
- Oven
- Electric griddle
- Hot pad (for heating water for tea)

BEFORE YOU BEGIN

- Parboil the potatoes.
- Prepare a batch of ketchup and allow to sit overnight for the first class to use.
- Heat water for tea.

Procedures

1

AT THE CHEF MEETING

1. Welcome students back to the kitchen. Explain that this is the last of their three lessons in the kitchen this fall. Today we'll be making breakfast: eggs, potatoes, ketchup, and tea.
2. The past two lessons have focused on the themes of independence and seasonality in the kitchen. This final lesson involves an even higher level of independence and group autonomy in the kitchen. Greater independence demands even more advanced collaboration skills, and entails greater responsibility.
3. Today students will decide as a group how they will cook their potatoes. In order to make this decision, encourage students to rigorously engage with their group dynamics—challenge them to make the decision in a way that allows everyone in the group to feel seen and heard. In dividing up work, challenge the groups to aim for fairness. Explain that if over the previous two lessons certain students took more vocal roles in facilitating group decision-making, the highest form of leadership is to recognize when listening more and talking less will allow everyone in the group to contribute. “Step up, step up” is a saying that recognizes that for people who find it comfortable to be quiet and listen in a group, becoming more vocal is a way of stepping up into leadership, and that for people who find it comfortable to be more vocal, increasing their listening is a way to step up their leadership skills.
4. Explain that in addition to making decisions as a group, groups will coordinate their timing to prepare multiple recipes. They will be given time to plan when we break into our small table groups.
5. Finally, everyone will cook an egg for themselves.
6. Demonstrate how to make a scrambled egg and a fried egg. Specifically explain that you must add oil or butter to the pan before cooking an egg; demonstrate and explain how to crack an egg; explain that mixing in salt before adding a scrambled egg to the pan improves flavor and texture; and that if you are using a nonstick pan, you must use wood or plastic utensils to avoid scratching the pan.
7. Ask students to wash their hands and break into their table groups.

2

AT THE TABLE

1. Small-group check-in: What is your favorite breakfast food? What is your favorite way to eat potatoes?
2. Introduce the recipes for today: potatoes, homemade ketchup, herb tea, and eggs. The group gets to decide whether they prepare their potatoes on the griddle as homefries, in the oven as oven fries, or a combination of the two. They also have the option to make mashed potatoes without a recipe if they want to. Because the ketchup recipe needs to sit overnight in order for the flavors develop, they will be preparing ketchup for the following day's classes and personalizing ketchup the previous day's classes prepared. There is no recipe for the herb tea—the group gets to decide what herbs they harvest and include in the tea.
3. Explain that today the group will also be coordinating timing to prepare all the food in time to eat. Recommend that they consider waiting until the end of class to cook the eggs because cold eggs are not very delicious. Recommend that they allot about 15 minutes total for each student to cook their own egg. Facilitate the group in working backwards to identify target times for different stages of the meal preparation—start with cleanup and work backwards through mealtime, cooking the eggs, setting the table, etc. Have the group assign at least one timekeeper.
4. Turn it over to the small group to identify and divide cooking jobs.
5. Prepare the recipes. Offer support where needed.
6. Set the table and eat. While eating, debrief with the group how the team worked together.
7. Clean up.

3

AT THE CLOSING CIRCLE

1. Students rate the food on a scale of 1 to 5.
2. If there is time, have students share something they learned from the first three lessons of their eighth-grade rotation.

Teaching Notes

Timing: This lesson required every one of the 85 minutes we had to teach it. Instead of meeting around the middle table for the Chef Meeting as we normally do, we had students go straight to their table groups in order to streamline and buy some time.

“Step up, step up”: We observed that overtly naming in the Chef Meeting that the increased level of independence in the lesson required an increased level of responsibility allowed our students to collaborate much more successfully. We found that encouraging students to recognize listening as a form of leadership and pay attention to whose voices were being heard meant that group power dynamics were less likely to fall along lines of larger social power dynamics (i.e., the white boys in the group being the most vocal). Setting

up more intentional structures for students to collaborate in a way that disrupts current social power dynamics remains a major area of inquiry for us.

Egg demonstration: The first couple of times we taught this lesson, we didn't demonstrate how to cook an egg in the Chef Meeting. Instead, we demonstrated how to cook an egg just in small groups during the cooking time (or had a student demonstrate). We found that including an egg demonstration in the Chef Meeting helped to streamline the lesson because students more reliably retained key points (preheating the pan, adding fat to the pan before the eggs), and showed students how quickly an egg could cook (which also dramatically cut down on the number of rubbery, overcooked eggs).

Cracking an egg: Students had a much higher success rate cooking their eggs after we started overtly demonstrating how to crack an egg in the Chef Meeting (both on the table and pulling the shells apart).

Vulnerability and fear of failure: We observed that not knowing how to cook an egg could make some students feel vulnerable or embarrassed. For others, cooking their own egg represented a large responsibility that made them nervous. Often, students expressed this hesitation by saying that they didn't want an egg or that they didn't like eggs. Most times, offering the student direct support in cooking their egg and explaining they didn't have to eat it if they didn't want to changed their minds and made them eager to try cooking an egg. In addition we found that the Chef Meeting egg-cooking demo helped to allay many students' fears. We also often identified one or two students who had experience cooking eggs and asked them to go first so others could observe.

Pride in mastery: Students who had experience cooking eggs were often very proud to showcase their skills. Challenging these students to explain their steps while other students observed was often a fulfilling experience for them and a good way for less experienced egg cookers to gain confidence.

Nonstick pans: We used nonstick pans to cook the eggs for ease of turnaround and greater success rate. We also found that flipping an egg in the nonstick pan could be a fun and thrilling group moment.

Setting up the egg stations: We preset pans, oil, butter, salt, pepper, eggs, compost bucket for egg shells, spatulas, bowl, and fork for scrambled eggs at each cooking station.

Potatoes: Parboiling the potatoes makes the home fries cook more quickly. Encouraging students to let the potatoes sit on the griddle undisturbed, only stirring occasionally, allows the potatoes to brown and gives students a good opportunity to clean up.

Ketchup: It was more fun and delicious to use herbs, garlic, vinegars, and hot sauces to customize the ketchup than it was to use dry spices.

Hot sauce diversity: We made multiple hot sauces available to our students during this lesson (Crystal, Tapatío, Cholula, Sriracha). Students often identified very strongly with one or two hot sauces and were very happy to see their own hot sauce because it was an opportunity for them to see their culture represented in space

Connections to Standards

CALIFORNIA COMMON CORE STATE STANDARDS ENGLISH LANGUAGE ARTS AND LITERACY IN HISTORY/SOCIAL STUDIES, SCIENCE AND TECHNICAL SUBJECTS (CCSS.ELA)

SPEAKING AND LISTENING STANDARDS

- SL.8.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- b.** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.

LANGUAGE STANDARDS

- L.8.4.** Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.
- a.** Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.

READING STANDARDS FOR LITERACY IN SCIENTIFIC AND TECHNICAL SUBJECTS

- RST.8.2.** Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
- RST.8.3.** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

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.

POTATOES!



3 pounds potatoes, partially cooked

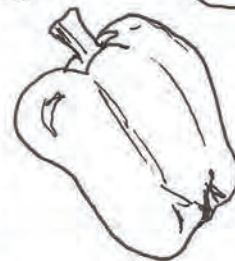
1 onion, diced or thinly sliced

1-2 bell peppers, diced or sliced

4-6 cloves garlic, minced

3-4 tablespoons vegetable oil

Salt and pepper to taste



HOMEFRIES

- ① Prepare the onions, garlic and bell peppers. Cut the potatoes into sugar cube size pieces.
- ② Heat a large pan or griddle over medium-high heat.
- ③ Add the oil and onions to pan or griddle. Cook until onions are soft. Add bell peppers, garlic, and 3 big pinches of salt. Cook until peppers soften.
- ④ Add the potatoes. Cook, stirring occasionally, until golden brown.
- ⑤ Season with salt and pepper.

OVENFRIES

- ② Preheat oven to 425°F
- ③ Toss the potatoes, onions, peppers, garlic, salt and pepper in a bowl with the oil.
- ④ Spread mixture in a single layer on sheet pans.
- ⑤ Roast in oven for 20 minutes, or until potatoes are golden brown.
- ⑥ Season with salt and pepper.

HOMEMADE KETCHUP

- 6 ounces TOMATO PASTE
- 3 tablespoons BROWN SUGAR
- 1/4 teaspoon GROUND MUSTARD SEED
- 1/4 teaspoon SALT
- 1/4 scant* teaspoon CINNAMON
- 1 pinch GROUND CLOVE
- 1 pinch ALLSPICE
- 1 pinch CAYENNE PEPPER
- 1/3 cup WATER
- 2 tablespoons WHITE WINE VINEGAR

- ① Combine all the ingredients in a mixing bowl.
- ② Stir until the sugar is completely dissolved.
- ③ Store in an airtight container in the fridge. Let sit overnight for flavors to develop. This recipe should last for 3 weeks in the refrigerator.

*"scant" - just barely, or a little bit less than the full measure.



Debate Plate: Preview

In the Academic Classroom

Summary

In this 8th grade humanities lesson, 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. This is the first lesson in the Debate Plate lesson series, a five-lesson series that focuses on factors and considerations that influence personal food choices and the impacts of those choices.

Objectives

After this lesson, students will be able to:

- ▶ Understand and define a variety of basic vocabulary to do with the theme of food choices and food justice
 - ▶ Articulate the concept of food choice and give examples of different considerations someone might have when choosing what food to buy or where to shop
 - ▶ Discuss and give examples of ways in which issues of health, economic status, and food access intersect
-

Assessments

During this lesson, students will:

- ▶ Read an article that uses specialized food system vocabulary, refer to a glossary to define words they are unfamiliar with, and use this new vocabulary to answer discussion questions on topics raised by the article
 - ▶ Discuss reasons that consumers might choose to shop at the Mandela Foods Cooperative
 - ▶ Debate whether providing healthy food incentives to residents of low-income neighborhoods that excludes certain “unhealthy” foods is fair or not
-

Materials

- ☑ Printed copies of “Commentary: West Oakland foods cooperative defies odds, serves people”
- ☑ Printed copies of “Mandela Foods Cooperative Discussion Questions/Glossary”
- ☑ Board or printed copies with exit ticket questions:
 - ▶ To me, the motto “food plus people equals power” means...
 - ▶ The author argues that the Mandela Foods Cooperative impacts West Oakland in a variety

of ways beyond just providing food for people to buy. Think about the store or market where the majority of the food you eat is bought. What are some of the impacts you think this store might have on its neighborhood?

- ▶ The Mandela Foods Cooperative is located in an area with very few other places to buy groceries. Think about the area where you live - how many places to buy groceries are located within walking-distance from your home?

BEFORE YOU BEGIN

- ☑ Make copies of “Commentary...” to hand out.
- ☑ Make copies of Discussion Questions and Glossary to hand out
- ☑ Write on the board or make copies of exit ticket questions.

Procedures

1. Welcome students to the classroom. Explain that next week, they’ll begin a week-long unit called “Debate Plate” that examines factors and considerations that influence personal food choices and the impacts of those choices. Today is a preview day for the conversations they’ll be having in greater depth next week.
2. Hand-out copies of the article. Point out that the title of the article labels it as a “commentary”. Ask students to define “commentary” and elaborate on what that tells them about the information presented in the article. This is an opinion-piece written by an individual with a specific point of view and a purpose in sharing that point of view with an audience.
3. Hand-out copies of the discussion questions and glossary. Have students read the article - independently, in small groups, or as a class. Point out to students that they can use the glossary as a resource while reading the article.
4. After students have read the article, use the discussion questions to facilitate a class discussion, either as a full class or in small groups.
5. If you have time, choose one of the following prompts for students to complete as an exit ticket:
 - ▶ To me, the motto “food plus people equals power” means...
 - ▶ The author argues that the Mandela Foods Cooperative impacts West Oakland in a variety of ways beyond just providing food for people to buy. Think about the store or market where the majority of the food you eat is bought. What are some of the impacts you think this store might have on its neighborhood?
 - ▶ The Mandela Foods Cooperative is located in an area with very few other places to buy groceries. Think about the area where you live - how many places to buy groceries are located within walking-distance from your home?
6. Thank students for their participation in the class, and tell them that they’ll continue to dig into connections between food, health, environment, and justice when they go to the kitchen next week.

Vocabulary

- ▶ Commentary
- ▶ Big Box
- ▶ Community-owned
- ▶ Conversely
- ▶ Cooperative
- ▶ Credit Union
- ▶ Entrepreneur
- ▶ Full-service grocery
- ▶ Gentrification
- ▶ Incarcerated
- ▶ Locally-sourced
- ▶ Marginalized
- ▶ Purchasing-incentive
- ▶ Recession
- ▶ Retail-test
- ▶ Revenue
- ▶ Soul Food
- ▶ Stable income

☑ Connections to Standards

COMMON CORE: READING STANDARDS FOR INFORMATIONAL TEXT, GRADE 8

RSI.8.2. 2. Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.

CALIFORNIA STATE COMMON CORE, SPEAKING AND LISTENING STANDARDS, GRADE 8

SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

SL.8.4 Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

EDIBLE SCHOOLYARD 1.0 IN THE EDIBLE SCHOOLYARD PROGRAM:

Tools 1.1. Engage in structured groups to complete tasks and practice teamwork.

Tools 1.2. Make positive contributions to small group discussions.

Tools 1.3. Communicate relevant questions to classmates; build language and listening skills by practicing self-control, self-awareness, and noticing our impact on others.

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.

EAST BAY TIMES

Commentary: West Oakland foods cooperative defies odds, serves people



Mandela Foods Cooperative employee Bryan Daniels holds some local Oakland product sold at the Oakland grocery store near the West Oakland BART station. Mandela MarketPlace, which launched the locally sourced, community-based food cooperative in 2009, is planning to open a new grocery store, food hall and retail concept in a 2,141-square-foot, ground-floor retail space in Ashland Place, an affordable housing development next to the REACH Ashland Youth Center. The retail space is now under construction and is set to open in late summer 2017. (Paul Kuroda/Bay Area News Group)

By **DANA HARVEY** |

PUBLISHED: January 24, 2017 at 12:48 pm | UPDATED: January 24, 2017 at 1:40 pm

Ten years ago, residents and organizers in West Oakland began negotiations with affordable housing developer Bridge Housing to secure a 10,000 square-foot retail space to house a community-owned and operated grocery store.

Mandela Foods Cooperative, was designed and is owned and operated by community members. Despite widespread neighborhood support of the cooperative, during the final hours of negotiations, Bridge Housing decided to lease the space on the historic 7th Street to big box retailer 99 Cents Only; leaving a much smaller retail space for the community-supported business.

Mandela Foods Cooperative is the only full-service grocery store in West Oakland, and it serves a much larger purpose than just being a place to shop for healthy fruits and vegetables. MFC provides jobs, boosts the local economy by creating business ownership opportunities for residents and creates a place for new local entrepreneurs to retail-test their products.

Despite opening during a deep nationwide recession, in 2009, workers and owners saw sales grow by 20-30 percent each year and by 2015, MFC was turning a profit. Not only has Mandela Foods Cooperative created a space for healthy food options, it also proves that residents can come together to successfully create, open, operate and own successful businesses.

MFC serves the community — the new residents and long-timers — while also honoring a historic West Oakland culture in the midst of rapid gentrification.

Conversely, the big-box retailer that originally beat Mandela Foods Cooperative out of the large space on the corner of 7th Street has now chosen to leave the neighborhood.

Ten years ago, many saw Mandela Foods Cooperative as the store that was a risk, and saw 99 Cents Only Store as the sure thing. Now, 99 Cents Only is pulling out — and Mandela Foods Cooperative is looking to expand.

Mandela Foods Cooperative has generated more than \$6 million in revenue that it has pumped into the local community and economy. MFC serves as a job-training center and provides local youth, formerly incarcerated individuals, and other residents with jobs and stable incomes.

Through its purchases of locally sourced goods and produce, Mandela Foods Cooperative has created more than \$200,000 in new income for marginalized farmers and has helped more than 42 businesses secure retail space for locally produced products.

Zella's Soulful Kitchen, located in Mandela Foods, launched a café-style restaurant that features freshly-prepared soul food, continuing a West Oakland tradition of sharing family recipes with neighbors.

Finally, Mandela Foods Cooperative has contributed more than \$45,000 in property taxes to Alameda County.

Today, Mandela Foods Cooperative continues to serve the local community. The store's commitment to community is visible — the store showcases local talent, authors and businesses; provides healthy food purchase incentives to residents of Mandela Gateway and families using food stamps; and serves as a center for health education, local culture and fresh, affordable healthy foods. Additionally, Mandela Foods Cooperative has banked with the community-initiated Community Trust Credit Union since MFC began operation in 2009.

Now, with the 99 Cents Only store leaving, Mandela Foods Cooperative can confidently expand into a larger storefront — increasing its benefit to community culture, community economy and community health. With so much done in a small space, what these business owners can accomplish in a larger space can only be imagined

Dana Harvey is the executive director of Mandela MarketPlace. For more information, call 510-433-0993 or visit www.mandelamarketplace.org.

Harvey, Dana. "Commentary: West Oakland foods cooperative defies odds, serves people." East Bay Times. 24 January 2017, <http://www.eastbaytimes.com/2017/01/24/commentary-west-oakland-foods-cooperative-defies-odds-serves-people/>. Accessed 26 January 2017.

Mandela Foods Cooperative (MFC) Discussion Questions

1. What are five ways that the author argues Mandela Foods Cooperative benefits West Oakland?
2. The article says that *“Ten years ago, many saw Mandela Foods Cooperative as the store that was a risk, and saw 99 Cents Only Store as a sure thing.”* Why do you think this was?
 - a. What do you think their arguments for the 99 Cents Only Store were?
 - b. What do you think their concerns about Mandela Foods were?
 - c. Do you think the arguments against MFC are still relevant?
4. Mandela Foods Cooperative has been successful in turning a profit since it opened. Why do you think people choose to shop there? Do you think everyone shops there for the same reasons?
5. *“Through its purchases of locally sourced goods and produce, Mandela Foods Cooperative has created more than \$200,000 in new income for marginalized farmers and has helped more than 42 businesses secure retail space for locally produced products.”* What does this mean? Can you give an example? How do you think this is happening? What impacts does it have?
6. In the article, the author says that Mandela Foods Cooperative provides *“healthy food purchase incentives to residents of Mandela Gateway and families using food stamps.”* The purchase incentives she mentions are:
 - ▶ 50% off all fresh and frozen produce and bulk nuts and fruits for those who qualify for food stamps (50% discount does not apply for foods containing added sugar, salt, or oil)
 - ▶ 15% off groceries for Mandela Gateway residents
 - ▶ 10% discounts for items bought in bulk
 - a. Why would a marketplace offer this type of program? What is their goal?
 - b. Why do you think they exclude foods containing sugar, salt, and oil from the 50% discount? Do you think this is fair?
3. MFC also partners with other stores in the area, specifically corner stores and liquor stores, by delivering fresh produce to them that they can sell. Why would they partner with other stores in the neighborhood? Wouldn't they see them as competition?
4. The motto of Mandela Foods Cooperative is *“Food plus people equals power.”* What does this mean?

Glossary of Terms

Big Box (adj.) A big-box store is a large store, usually part of a chain, that sells vast quantities of a large variety of things at relatively low prices (ex. Walmart, Target etc.).

Community-owned (adj.) A business owned by the employees. Some use collaborative structures in which employees make decisions about how to run the business.

Conversely (adv.) A word used to introduce a statement or idea that reverses or says the opposite of what has just been said.

Cooperative (n.) A farm, business, or organization that is owned, controlled, and run collaboratively by a group of people, with profits or losses shared among them.

Credit Union (n.) Like a bank, but instead of being owned by a large investor, a credit union is owned by the people that use its services. This means that it is not run for profit, and if you have a savings account, checking account, or take out a loan from a credit union, you have a say in how the credit union gets run.

Entrepreneur (n.) A person who organizes, operates and runs a business.

Full-service grocery (n.) Full-service grocery stores sell items from at least six of the following categories: fresh fruits and vegetables, fresh and uncooked meats, poultry and seafood, dairy products, canned foods, frozen foods, dry groceries and baked goods, non-alcoholic beverages. *Source: D.C. Alcoholic Beverage Regulation Administration*

Gentrification (n.) A general term for the arrival of wealthier people in an existing urban district, a related increase in rents and property values, and changes in the district's character and culture. The term is often used negatively, suggesting

the displacement of poor communities by rich outsiders. The effects of gentrification are complex and contradictory, and its real impact varies. *Source: P.B.S.*

Incarcerated (adj.) In jail or prison.

Locally-sourced (adj.) Food that is locally produced, not moved long distances to market. A common definition of "local" food is food grown within 100 miles of where it is bought or consumed. *Adapted from Wikipedia*

Marginalized (adj.) Socially excluded or denied power within a group, community or society. Marginalized groups are denied access to or involvement in mainstream economic, political, cultural and social activities. Marginalization tends to be directed at groups who are seen to differ from perceived norms. *Adapted from Reference.com*

Purchasing-incentive (n.) Used to encourage consumers to buy a specific product by offering an extra benefit to those that do (ex. Customers that buy two or more apples get a free cookie as well).

Recession (n.) A period of temporary economic decline, often accompanied by increased unemployment.

Retail-test (v.) Test out a new product by making it available to consumers and seeing how popular it is.

Revenue (n.) The total dollar amount of sales made by a business.

Soul Food (n.) African American cuisine developed primarily by African-American communities in the American South from the time of slavery until modern-day.

Stable income (n.) Someone has a stable income if they get paid the same amount of money on a consistent basis.

Debate Plate: Health & Nutrition

Spiced Red Lentil Stew and Indian-Spiced Cabbage Slaw

Summary

In this eighth-grade humanities lesson, 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. This is the first in the Debate Plate lesson series, a five-lesson series that focuses on factors and considerations that influence personal food choices and the impacts of those choices.

Objectives

After this lesson, students will be able to:

- ▶ Describe food choices as complicated and multilayered.
 - ▶ Explain some of the considerations that determine their own food choices.
 - ▶ Feel empowered to begin articulating their own visions and practices of health in regards to food and eating.
-

Assessments

During this lesson, students will:

- ▶ Generate a list of possible considerations for making food choices.
 - ▶ Reflect on what factors most influence their own food choices.
 - ▶ Recall what they have heard about health and nutrition, hear a teacher's perspective on health and nutrition, and reflect on how this information impacts their own understandings of health and relationships to food and eating.
-

Materials

FOR THE CHEF MEETING

- Poster paper and pens, or board and sticky notes
- Spiced Cabbage Slaw recipe
- Example bowl of dried lentils
- "Debate Plate" visual aid
- Red Lentil Stew recipe

INGREDIENTS FOR THE RED LENTIL STEW

- Red lentils
- Butter
- Yellow onions
- Carrots
- Fresh ginger
- Ground cumin
- Ground coriander
- Paprika
- Turmeric
- Bay leaves
- Whole cloves
- Cinnamon sticks
- Cardamom pods
- Potatoes
- Honey
- Salt
- Asafoetida

INGREDIENTS FOR THE SPICED CABBAGE SLAW

- Purple and green cabbage
- Carrots
- Red onions
- Limes
- Thai chilies
- Cilantro
- Whole cumin seeds
- Mustard seeds
- Salt
- Pepper

TOOLS

- Cast-iron skillet
- Heavy-bottomed pot
- Saucepan
- Mixing bowl
- Salad bowl
- Reamer
- Grater
- Vegetable peeler
- Mortar and pestle (for grinding spices if not already ground)
- Wooden spoons
- Chef's knives
- Paring knives
- Cutting boards
- Measuring cups
- Measuring spoons

EQUIPMENT

- Stove

BEFORE YOU BEGIN

- Collect all the ingredients and tools, and distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Create the visual aid.
- Put up the poster paper to take notes during Chef Meeting.
- Copy the Red Lentil Stew and Spiced Cabbage Slaw recipes to hand out.
- Soak the red lentils (if concerned with having enough time to cook).

Procedures

1 AT THE CHEF MEETING

1. Welcome students back to the kitchen. Explain that this is the first of five lessons they'll have in the kitchen this spring, culminating in a pizza lesson at the end of the year. This week they'll be embarking upon a lesson series called "Debate Plate," which examines the factors behind what we choose to eat and the impacts of those choices. They have already started the discussion in their classrooms by reading the article about the Mandela Foods Cooperative in West Oakland. We'll continue to talk about the themes raised in the article, and build on them over the next week. They'll

come into the kitchen four times, and spend Wednesday in the classroom doing a Debate Plate activity.

2. All week, we'll be thinking and talking about our relationships to food, engaging critically with the messages we hear about food and the way the food system currently works, and asking you to build self-awareness about your own food choices—the reasons behind them and their impacts. The series is called Debate Plate because each day we'll be asking you to construct arguments and defend your opinions on all kinds of questions related to food. There are no right or wrong answers for any of what we'll be talking about, and we'll definitely raise more questions than we can answer, so we invite you to dig in without hesitation.
3. Ask for two volunteers to act as scribes. Lead a student brainstorm: What do you take into consideration when deciding what to eat or not to eat? What influences your food choices? Put ideas up on the board—leave the board up over the course of the week to add to as new ideas arise. If students are hesitant to add ideas, name a few of your considerations to get the process going.
4. You can already see from this list that food choices are complicated and there are many potential factors involved. There is no such thing as “correct” or “right.” We have selected four potential considerations to focus on this week: Health & Nutrition, Environment, Justice & Labor, and Cost & Access. Today we'll be looking at Health & Nutrition.
5. Student poll: Who has had some form of nutrition education before? This may have been in school, at home, or by way of information that you've seen, heard, or read.
6. Think-Pair-Share: Turn to a neighbor, and in 30 seconds try to list as many things as you can that you have heard about food, nutrition, and health. You may or may not agree with these things. Walk around the room and observe and listen as students talk.
7. There is a lot of information out there! Many of the things you've heard probably seem contradictory. I'm not going to add to that information. Instead, today I want to share a little of my perspective—how I've come to navigate thinking about my health when I make food choices. I'm not sharing because I want you to think the way I do or because I think that my way of defining health is correct. My hope is that hearing my perspective may be useful as you continue to develop your own personal understanding of health.
8. Share a personal anecdote that illustrates an approach to health and nutrition that prioritizes long-term balance and emotional well-being as opposed to making every individual food choice “perfect.”
 - ▶ Nick: I'm going to start by telling you that I love the Nacho Cheese Chalupa from Taco Bell. For me, there is absolutely nothing like the gooey, chewy, cheesy, crispy phenomenon that is the Taco Bell Chalupa with nacho cheese. And many of you are looking at me right now like, “You can't say that! You're a Chef Teacher at the Edible Schoolyard! You can't like Taco Bell!” And I'm telling you I can, and I do. I love Taco Bell.

- ▶ I also don't eat there every day. As you saw with this list we made, there are many different considerations that may go into choosing what to eat. For me, Taco Bell is absolutely delicious so it definitely hits my "taste" standards. It's also quick and easy to get, convenient, and cheap. It doesn't hit my standards for environmental impact, animal welfare, or how it impacts people who work in the food system, and it's definitely not top of my list for health and nutrition.
 - ▶ But I try not to worry about having every single food choice I make hit every consideration—that's just too much. Instead, I try to think about balancing my considerations over the long term. Overall, health and nutrition is important to me, so I wouldn't eat Taco Bell for every meal. But I also wouldn't want to never eat a food that brings me so much joy taste-wise simply because it doesn't fulfill all of my standards. I think about long-term balance, not short-term perfection.
9. Break down "healthy"/"unhealthy" and "healthy"/"delicious" binaries: When I'm making food choices, I also don't like to label a food "healthy" or "unhealthy." If I do this, I inevitably feel shame or guilt when I eat a food that I've labeled "unhealthy." I don't want this in my relationship to food. Nor do I believe that "healthy" food and "delicious" food are polar opposites. I think there's a ton of food that is both healthy and delicious, and I try to spend most of my time eating in that zone. Overall, I want the food I eat to bring health to my body, and I also want to feel happy and good while I'm eating—to cultivate a healthy relationship to food.
 10. Introduce recipes for the day: Red Lentil Stew and a Spiced Cabbage Slaw. When I was walking around the room, I heard a lot of people talking about "this food is bad for you" or "that food will make you sick," and not as many people sharing information they'd heard about foods being good for you or health-giving. I think this is very representative of the dominant food culture in the US. We have a lot of negative framing around food that focuses on limiting how much we eat things that we think will do us harm. We chose to make two recipes from Indian cuisine today because there is a radically different approach to food in Ayurveda, a traditional medicine practice from the Indian subcontinent. Ayurvedic thought around nutrition sees foods as health-giving in different ways, and as nourishing not just our bodies, but also our minds and spirits. We aren't going to go in-depth into that as we are no experts. Rather we wanted to prepare this food today as an introduction into that positively framed relationship to food, health, and nutrition.
 11. Ask students to wash their hands and go to their table groups.

2

AT THE TABLE

1. Small group check-in: What is a comfort food for you?
2. Introduce jobs for the day in more detail. Explain how flavors in the spices we're using (coriander, cumin, etc.) are largely fat-soluble, which is why we'll be frying them in oil to release the flavors for both the lentil stew and the slaw.
3. Students split up into jobs.

4. Prepare recipes, clean up, eat. At the table, ask students to debate whether or not the government should regulate what kind of foods 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? Should they be national guidelines or vary locally?

3 AT THE CLOSING

1. Ask students to rate the food using their fingers on a scale of 1 to 5.
2. If there is time, ask students to share thoughts from their small table group discussions.

Teaching Notes

We deliberated on changing the name of this lesson from “Health and Nutrition” to “Relationship to Food and Food Choices” to more accurately reflect the content. Ultimately we decided to keep the name “Health and Nutrition” to highlight that having a healthy relationship to food is part of health and nutrition.

The principal goal of this lesson and series is to encourage students to engage in reflective, critical thought about their food considerations. We are not trying to change their considerations in any way except to encourage them to do mental work, which may result in their own changes. We are actively seeking to avoid shaming any existing considerations or choices.

In building this lesson we were looking to build a counter-narrative to a common narrative in nutrition education: that there are “bad foods” that will degrade and destroy your health and that they need to be avoided entirely.

- ▶ We first wanted to build a lesson with positive framing that acknowledges the tremendous joy that many students derive from eating as a valid input to making food choices
- ▶ We wanted to alleviate guilt and shame and share a vision of a healthy relationship to food as opposed to a narrow focus on healthy foods.
- ▶ A major part of the desire to do this rose from seeing our students shamed in other nutrition lessons that vilified foods that they frequently consume.
 - ▶ We saw this as counterproductive to building a relationship with the students, which we see as essential to being able to teach them and effect change in their lives.
 - ▶ This happened most often to students of color and students from low-income households.

Our check-in question for this lesson was, “What is your comfort food?” This is to reiterate that happiness, pleasure, and emotional well-being are part of health and wellness.

At the start of the lesson we acknowledge that these recipes are less forgiving than many things that we cook and that they must follow instructions carefully because the techniques matter. We frame this as advancement and trust in their cooking ability.

We introduced sequence thinking and asked the students to ask themselves questions such as: “What needs to cook first? Should I cut that first?”

Measuring and combining the lentils and water before class starts allows the lentils to soak for 20 minutes or so, which speeds up the cook time.

We found that working closely with students on toasting and blooming spices was important to get the most delicious coleslaw and stew. If the cumin and mustard don't get toasted enough, the slaw has very little flavor.

We found that putting a copy of the recipe next to the spices with the spices highlighted made it significantly easier for students to navigate that part of the recipe.

The coleslaw recipe uses the word “shredded” to describe how to prepare the carrots and cabbage. We were surprised to see many students confused about what to do with that instruction. We guided them to using knives, peelers, and graters based on how they wanted the texture to be for their coleslaw.

Asafoetida is a good addition to the lentil stew if you have it or can get it easily. That said, it is not essential. The stew is delicious without it as well.

We asked students to try the sliced onion before and after it had sat with the salt and lime so that they could observe the difference in flavor and texture.

If time allowed we would describe how some flavors are water-soluble while others are fat-soluble and that cooking in fat and then in something aqueous can extract the most flavor.

Students were often skeptical of the concept, the recipe, and the food itself while they were cooking. We responded by asking them to have faith in us as teachers, cooks, and eaters and to trust in that we always make delicious foods. Almost all the students really enjoyed the meal, and many were vocal about being surprised by how much they liked it.

The coleslaw and lentil stew make a great pair of dishes as they have very different dominant flavors. We encourage the students to try them together in the same bite and to try them in alternating bites and discuss how they like it better and if they think they support each other.

At the table we often talked about school lunch and the nutrition guidelines for school lunches. We asked students if they thought they were a good idea or not and what effects they have.

If time allowed, we used the food consideration cards after finishing cleanup.

Ask a student to make a map or chart of their food considerations from most important and most frequently thought about to least important or rarely thought about.

Ask students if they were surprised by anything in their map or if the process helped them learn about their considerations.

Ask students if they think that their considerations will change over time. Anything specific?

Do they have any cards or considerations that they would like to be in a different place? Would an aspirational map look different?

We asked students if we should make and include a body image card in the deck to generate conversation around how they think about food and their physical appearance. This typically yielded a rich conversation with most students agreeing that we should include that consideration.

Vocabulary

- ▶ Lens
- ▶ Lentils
- ▶ Slaw
- ▶ Medicinal
- ▶ Bloom (spices in oil)
- ▶ Considerations
- ▶ Factors
- ▶ Prioritize
- ▶ Binary
- ▶ Contradictory

☑ Connections to Standards

CALIFORNIA STATE COMMON CORE, GRADE 8

- SL.8.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- SL.8.1.d.** Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.
- SL.8.4.** Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. CA
- RST 6-8.3.** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- RST 6-8.10.** By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

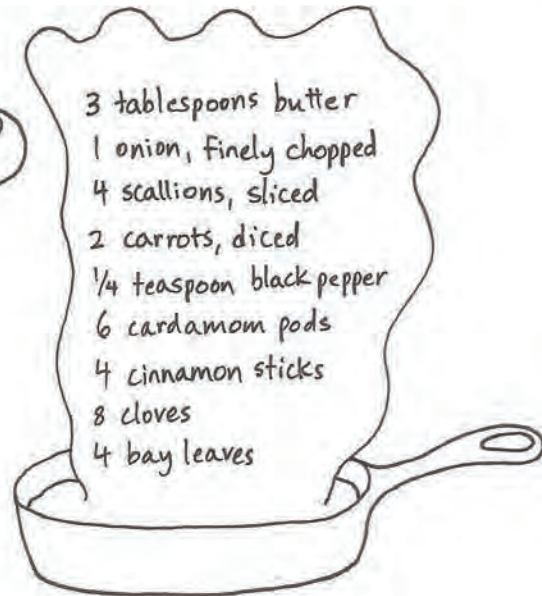
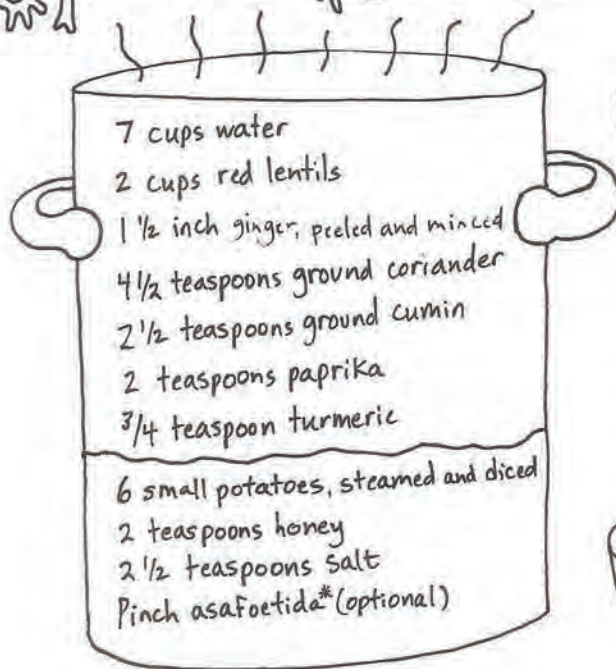
ESY STANDARDS, GRADE 8

- 2.1.1. Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently.
 - 2.1.2. Select measuring tools from the ESY Toolbox to measure precisely and convert measurements.
 - 2.3.8. Approach lessons with **intention** by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.
 - 2.3.9. Collaborate to identify, choose, and complete jobs to execute recipes, and explain each individual contribution to the end result.
-

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.

Spiced Red Lentil Stew



- ① Combine water, lentils, minced ginger, coriander, cumin, paprika, and turmeric in a medium pot. Bring to a boil over high heat, then reduce heat to medium and simmer until lentils are soft, 20 to 25 minutes.
- ② Meanwhile, heat a separate pan over medium-high heat. Add 2 tablespoons butter, the chopped onion and sliced scallions. Cook until the onions are soft. Then add the carrots, pepper, cardamom, cinnamon, cloves, and bay leaves. Continue to cook until carrots are starting to soften and onions are golden brown.
- ③ Pour the golden-brown onion mixture into the soft lentils. Stir in the potatoes, honey, salt, and asafoetida, if using. Simmer for 5 minutes to allow flavors to combine.
- ④ Remove from heat, stir in the remaining one tablespoon of butter and serve. Delicious over rice or with lime and cilantro to garnish.

* Asafoetida (pronounced "aah-suh-feh-ti-duh"), also called "hing" is an ingredient often used in Indian cooking. It is made from the dried sap of an herb native to Iran and Afghanistan.

indian-spiced cabbage slaw

INGREDIENTS

- 1/2 cabbage, finely shredded
- 2 carrots, finely shredded
- 1 bunch cilantro, finely chopped
- 1/3 red onion, finely chopped
- 1 lime, juiced
- 2 tablespoons canola oil
- 2 tablespoons brown mustard seeds
- 1 tablespoon cumin seeds
- 1 Thai chili, finely chopped
- Salt and pepper to taste



DIRECTIONS

1. Mix cabbage, carrots and cilantro in a bowl and set aside.
2. Finely slice or dice onion and put in a separate small bowl. Add one tablespoon of lime juice and a pinch of salt. Set aside.
3. Heat a small saucepan over medium heat. Add the canola oil, mustard seeds, and cumin seeds, and toast until fragrant, about 1 minute.
4. As soon as the cumin seeds begin to change color, take the pan off the heat and stir in Thai chili, remaining lime juice, and salt and pepper to taste.
5. Add the still warm spice mixture and the onion and lime mixture to the cabbage. Toss well, adjust seasonings, and serve.

ANIMAL
WELFARE

justice &
labor

Past
Experience

HEALTH ^{and}
NUTRITION

Appearance

Smell

SOUND

WEATHER

WHAT FACTORS IMPACT YOUR FOOD CHOICES?



HEALTH &
NUTRITION



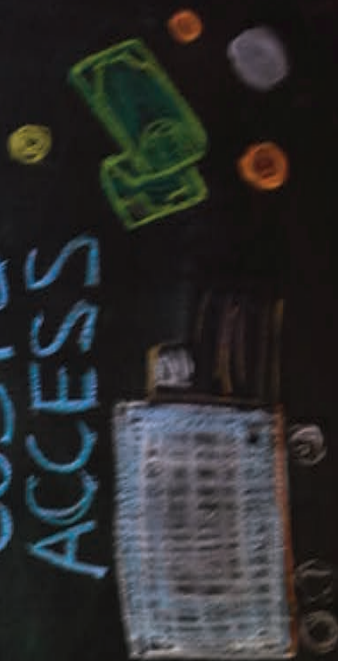
LABOR &
JUSTICE



ENVIRONMENT



COST &
ACCESS



Debate Plate: Environment

Frittata and Salad

Summary

In this eighth-grade humanities lesson, 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. This is the second in the Debate Plate lesson series, a five-lesson series that focuses on factors and considerations that influence personal food choices and the impacts of those choices.

Objectives

After this lesson, students will be able to:

- ▶ Give examples of how food choices impact the environment.
 - ▶ Describe the environmental impact of food waste, and explain how reducing food waste reduces environmental impact.
 - ▶ Explain how being informed and self-aware about the environmental impacts of your food choices allows you to exercise agency around the environmental impact of what you eat.
-

Assessments

During this lesson, students will:

- ▶ Brainstorm inputs that go into making food available for consumption.
 - ▶ Match each ingredient in the frittata with the amount of water that was used to produce it and discuss their reactions to how much water goes into one frittata.
 - ▶ Reflect on whether learning about the water that goes into a frittata has changed how they think about their own food choices.
-

Materials

FOR THE CHEF MEETING

- "Debate Plate" visual aid
- "How Much Water Made My Frittata?" visual aid
- Frittata recipe

- Salad Dressing recipe
- Citrus Dressing recipe
- Sesame Soy Dressing recipe
- Mustard Miso Dressing recipe

FOR THE CLOSING

- Yogurt container lids or other common disposable objects

INGREDIENTS FOR THE FRITTATA

- Olive oil
- Eggs
- Cheese
- Mix of seasonal vegetables
- Assorted fresh herbs
- Salt
- Pepper

INGREDIENTS FOR THE SALAD

- Arugula
- Apples
- Carrots
- Purple cabbage
- Pumpkin seeds or sunflower seeds

INGREDIENTS FOR THE SALAD DRESSING BAR

- Olive oil
- Toasted sesame oil
- Variety of vinegars, including rice vinegar
- Assorted citrus, including orange and lemon
- Assorted fresh herbs
- Garlic
- Shallot
- Ginger
- White or yellow miso
- Mustard
- Sesame seeds
- Honey
- Salt
- Pepper

TOOLS

- Cast-iron skillet
- Wooden spoons
- Mixing bowls
- Whisks
- Graters
- Chef's knives
- Paring knives
- Cutting boards
- Measuring cups
- Measuring spoons

EQUIPMENT

- Stove
- Oven

BEFORE YOU BEGIN

- Collect all the ingredients and tools, and distribute them to the tables.
- Gather supplies for the Chef Meeting.
- Gather supplies for the Closing.
- Create the visual aid.
- Copy the Frittata and Salad Dressing recipes to hand out.
- Steam potatoes (if using in frittata).

Procedures

1

AT THE CHEF MEETING

1. Welcome students back to their second day of Debate Plate in the kitchen. Remind students of the overarching questions of the week: What factors influence what we eat, and what are the impacts of those choices? Prompt students to remember the previous day's lesson: making red lentil stew and Indian-spiced cabbage slaw and talking about health and nutrition as a lens for thinking about food choices. Introduce the topic of the day: the relationship between what we eat and the environment.
2. Share a personal anecdote about how you learned to care about the relationship between your food choices and the environment:

3. Molly: When my grandma was my age, she lived with an exotic animal importer. This meant she shared her flat with not only two humans, but an orangutan, a mangabeee, a Great Dane, and an ever-rotating cast of small mammals, reptiles, and amphibians. She has great stories about having unsuspecting friends over for dinner only to find monkeys playing on their dinner dishes. Fast-forward 40 years to when I was born. Growing up, I spent every Friday evening at my grandma's house. She's a great cook, and one of her specialities was what she called "funny suppers." Given her great sense of humor around meals, you'd expect these funny suppers to be really fun, but the truth is, I hated them! Funny suppers were just another name for a dinner where she'd gone and opened the fridge, and pulled out all the odds and ends, leftovers, everything that needed to be eaten before it went bad, and stuck it on the dinner table. Some of it was pretty tame, but some of those funny suppers could get pretty out there with all kinds of weird foods and wild combinations. As a kid, I hated them. But as I've gotten older, I've actually grown to have a special place in my heart for funny suppers, and even find myself making them sometimes. Many of you probably know someone who hates to waste food—this is the place that funny suppers came from for my grandma. She has a deep appreciation of everything food represents, and she has taught me to feel the same: The food on your plate is more than just food, it also represents all the inputs that went into making to food available to you.
4. Prompt students to brainstorm the inputs that go into producing and processing the food we eat (water, land, nutrients in the soil, human time and labor, fuel for the farm equipment and transportation, electricity for processing and refrigeration, materials for packaging etc.).
5. Today we're going to focus on water. We did some research to find out how much water it takes to produce the ingredients that go into our frittata. Introduce the visual aid—this is just the water used to grow the ingredients, it doesn't represent any of the water used in processing or cooking. Ask for student volunteers to guess which amount of water corresponds to which ingredient (see "Visual Aid" in the Teaching Notes below for more on how we do this). Once the ingredients have all been matched with a water amount, reveal the total water used to grow the ingredients for one frittata.
6. Food takes a lot of water to grow! Especially animal products. This does not mean that growing and eating food is a waste of water—it simply means that growing food is very water-intensive and educating oneself about the inputs that go into making your food give you greater agency around the environmental impacts of your food choices. For example, now consider the statistic that 40% of food in the US goes to waste. Given what you know now, imagine how much water that represents when you think that when one single egg goes bad, or breaks accidentally, that's the same as wasting three showers' worth of water. Being aware of this allows you to be more mindful of food waste. When you reduce waste, you reduce environmental impact. This type of research could be done for any of the inputs we named earlier.
7. When you take into consideration everything that goes into making the food we eat available to us, food starts to seem a whole lot more precious. Every bite is a small

miracle. If this resonates at all with you, take a moment to think about this as you eat today.

8. Ask students to wash their hands and go to their table groups.

2

AT THE TABLE

1. Small-group check-in: What is your favorite way to eat eggs?
2. Introduce jobs for the day in more detail.
3. Split up into cooking jobs.
4. Cook.
5. Eat. A few good topics for conversation while eating could be:
6. Who do you know that absolutely will not waste food? Why is it important to them not to waste food? What are some strategies they have for not wasting food?
7. What are ways that you or people you know repurpose things that may otherwise be wasted?
8. What kind of environmental education have you had before? How has it made you feel? Do you think environmental education is important? How do you think these topics are best taught?
9. Clean up.

3

AT THE CLOSING

1. Ask students to rate the food using their fingers from 1 to 5.
2. If there's time, reflect on discussion from the small table groups. Encourage students to continue reflecting on the idea of waste, and see how much they can notice before Thursday, when we'll be meeting back in the kitchen.
3. If there's considerable extra time, play the "Repurpose Brainstorm Game" by putting a plastic yogurt-container lid on each table, and have small groups brainstorm as many ways they can think of to repurpose the lid. Write these ideas down, and afterwards have groups share out.

Teaching Notes

Teaching to empower: Our goal in every lesson of this Debate Plate lesson series is to support our students' development as critical, informed, and self-reflective eaters. We want to inspire in them a sense of empowerment around the potential impacts of their food choices. We make every effort to avoid framing our discussions in ways that could shame or overwhelm them. We want to recognize and honor the areas in which our students have agency over their food choices, as well as the areas they don't have agency or don't have agency yet.

Stories: We find that starting with a personal anecdote that connects the environment and food works well as a hook for the Chef Meeting. It grabs students' attention and also sets up the nonjudgmental, nondogmatic tone that we aim for in our treatment of the subject.

Visual aid: All the components of the visual aid are drawings that we laminated and attached to the poster with a piece of tape on the back. We interact with the visual aid in the Chef Meeting almost like a game show. When students arrive, the image of the frittata is in the center with the ingredients in a circle around it. The different water amounts are jumbled up and attached to the sides of the visual aid. During the Chef Meeting, we ask for students to match the ingredients to their corresponding water amounts. We always start by prompting students to consider the two largest water amounts and ask which two ingredients they think they correspond to and why (cheese and eggs). This helps them to understand that animal products are more water-intensive to produce than vegetable products. From there, sometimes we prompt more guessing, and sometimes we just match the amounts for them. Sometimes we'll also start the lesson with a couple matched to give them some reference points. At the end, we reveal the total amount of water in one frittata and hold up the cast-iron skillet we'll be using to cook it in so they can get a sense of the size. We find that having an interactive board is a great way to garner student interest, and makes a lasting impression on students. One of the major takeaways at the end of the week for many students is how much water it takes to grow food.

What's a frittata? For students who are unfamiliar with frittatas, we describe them as a baked omelette, or like a quiche without crust.

Eggs: The Frittata recipe calls for 8 to 20 eggs. When making this recipe with a class, we always use eight eggs because that way it cooks a little bit faster.

Cheese inside and on top: We encourage students to put some of the cheese in the egg mixture and reserve some to sprinkle on top before putting the frittata in the oven.

Cracking an egg: We like to demonstrate how to crack an egg while the students are working. Most students know how, but for the few who are unfamiliar with the skill, it can feel embarrassing and vulnerable to admit that to their group-mates.

Raw egg: Show students how to work next to the compost bucket while cracking the eggs so they don't drip raw egg everywhere.

Eggs and cheese: Some students can be hesitant about the combination at first, but even those who profess to hate eggs and cheese together tend to love the frittata.

Cooking rates: The recipe says to add the vegetables and herbs at the same time, but this is a good lesson to prompt students to recall the idea of cooking rates and add them to the pan at different times (aromatics, then crunchy, then leafy).

Hot sauce and culture: We made multiple hot sauces available to our students during this lesson (Crystal, Tapatío, Cholula, Sriracha). Students often identified very strongly with one or two hot sauces and were very happy to see their own hot sauce because it was an opportunity for them to see their culture represented in the space.

Onions: We used bulb onion for this lesson, but when making frittata with sixth graders we often use spring onions instead because it is less irritating to the eyes.

Salad dressing: Because there are so many options for dressing, this is an excellent opportunity to encourage students to really use their senses as their guide. We like to show students how to put a little bit of vinegar on their palm to taste so that they can compare the flavors of different vinegars. We also show them how to use a piece of lettuce to dip into the dressing as they work so they can get a better sense of how the dressing will taste on the salad without creating more dirty dishes.

Toasted seeds: Toasted pepitas or sunflower seeds are super popular to snack on and include in salad

Allergies: For students who are allergic to dairy, we reserve all the cheese to sprinkle on top and leave a piece of the frittata cheese-free. For students who are allergic to eggs, we always provide an alternative such as fruit, cheese, or toast.

Browning: This lesson is a good opportunity to show students how a little bit of browning on the bottom of the pan can add a lot of flavor.

Herbs: We use a variety of herbs in this lesson so that students can taste them and choose which to include in their frittata. Encourage students to use all their senses when choosing the herbs.

Fairness: Sometimes students become anxious when we start cutting the frittata for serving. We find it helps to name that you're trying to slice the frittata as evenly as you can and that it is very difficult to make it perfect, so please be understanding of that.

Testing for doneness: You know the frittata is done when the egg looks solid and doesn't shake when you shake the pan.

Frittata for everyone: This year we made frittatas with the sixth and eighth graders. With the sixth graders, we made the lesson more simple by cooking just the frittata without the salad.

Table discussion: We've found the best conversations around this topic happen when we ask about people students know who have specific practices or habits around waste. Almost every student will have a story about at least one person in their life who hates to waste something—whether it is food, water, clothes, or other things.

Vocabulary

- ▶ Environmental impact
- ▶ Sustainable
- ▶ Food waste
- ▶ Greenhouse gas
- ▶ Emissions
- ▶ Resource

Connections to Standards

CALIFORNIA STATE COMMON CORE, SPEAKING AND LISTENING STANDARDS, GRADE 8

- SL.8.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- SL.8.1.b.** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.8.1.d.** Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.
- SL.8.4.** Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. CA

CALIFORNIA STATE COMMON CORE, READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS

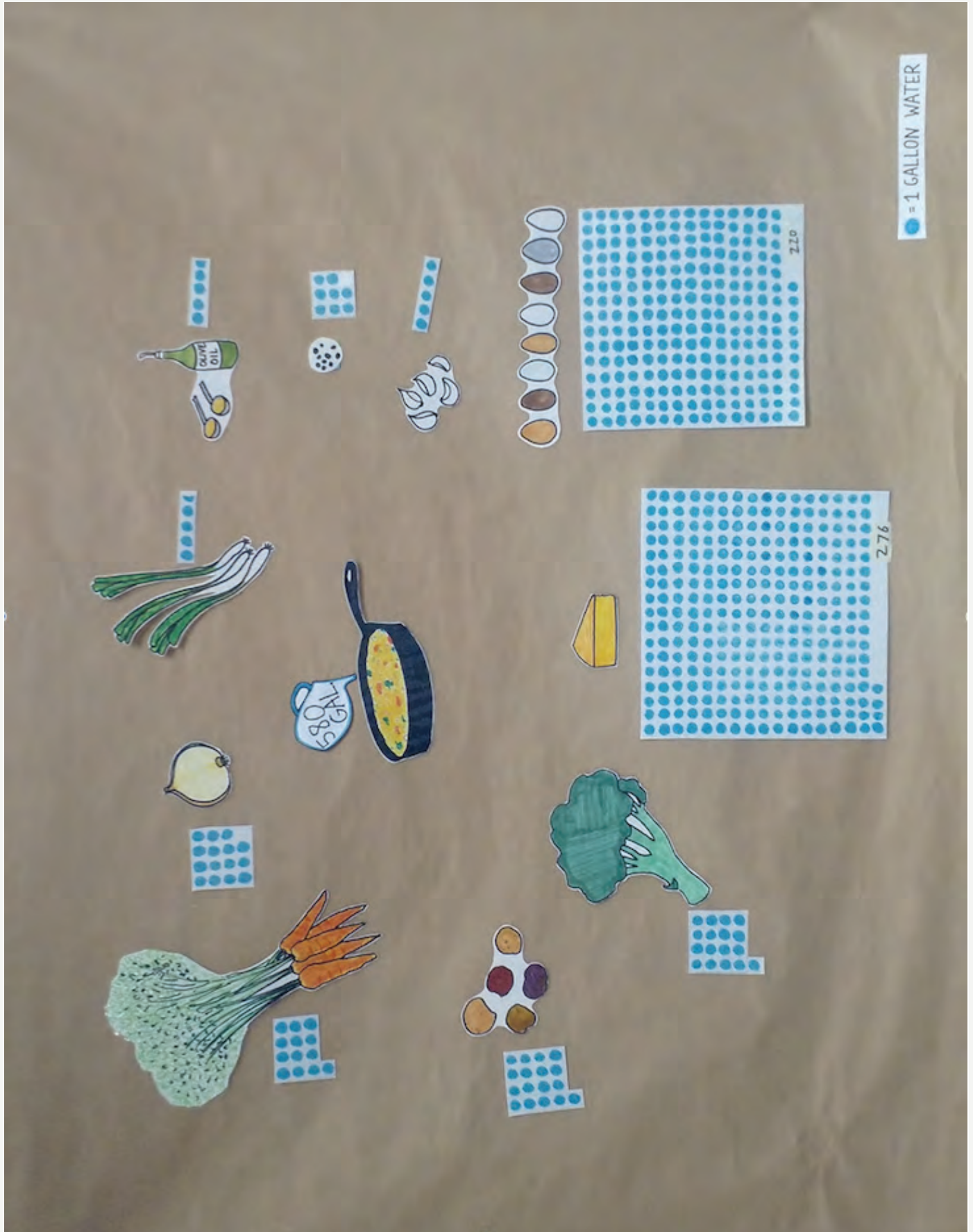
- RST 6-8.3.** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- RST 6-8.7.** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

ESY STANDARDS, GRADE 8

- 2.1.1.** Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently.
- 2.2.6.** Read and follow recipes, customize recipes when alterations and adjustments are possible, and improvise recipes after choosing seasonal ingredients.
- 2.2.7.** Demonstrate mastery of tasting and seasoning skills based on sensory observations, identify and recreate flavors from different countries and cultures covered in previous lessons.
- 2.3.8.** Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.
- 2.3.9.** Collaborate to identify, choose, and complete jobs to execute recipes, and explain each individual contribution to the end result.

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.



● = 1 GALLON WATER

FRITTATA

INGREDIENTS

- 8-10 eggs
- 2 tablespoons water
- 1½ teaspoons salt
- ½ teaspoon freshly ground pepper
- ½ cup grated cheese
- 2-3 cups assorted fresh vegetables and herbs
- 2 tablespoons olive oil



TIPS AND HINTS

- try adding a pinch of lemon zest to the egg mixture
- combine odds + ends of leftover cheeses to make ½ cup
- leftover cooked pasta is a great addition, or leftover chopped bacon or ham
- reserve a little grated cheese to sprinkle on top before putting the frittata in the oven

- ① Preheat oven to 375°. Crack the eggs into a large mixing bowl, add the water, salt, pepper and cheese and whisk till well blended.
- ② Wash and roughly chop the vegetables and herbs
- ③ In a large cast iron skillet, heat the olive oil over medium heat, add the chopped vegetables and herbs and cook until they are tender but not completely cooked.
- ④ Pour the egg and cheese mixture over the vegetables, stirring gently to mix, cook, stirring occasionally, until some of the egg is cooked and some remains raw. (Don't worry, it'll finish cooking in the oven.)
- ⑤ Transfer the skillet to the preheated oven and bake until the frittata is puffy and golden brown - about 15 minutes. Remove the frittata from the oven and let it cool for a few minutes before slicing into wedges, like a pie.

Basic Salad Dressing



3 tablespoon vinegar

$\frac{1}{4}$ teaspoon salt

$\frac{1}{4}$ teaspoon pepper



1 small clove garlic-
peeled and crushed

$\frac{1}{2}$ cup olive oil



In a small bowl combine the vinegar, salt, pepper and garlic. Add the olive oil *SLOWLY* by pouring it from the measuring beaker in a thin trickle while whisking constantly

Optional: fresh herbs, mustard, shallot or honey can be added if you like





Citrus Dressing

$\frac{1}{2}$ cup fresh-squeezed orange juice, (use blood oranges for a beautiful ruby colored dressing.)

1 tablespoon rice vinegar

1 small shallot, peeled and minced

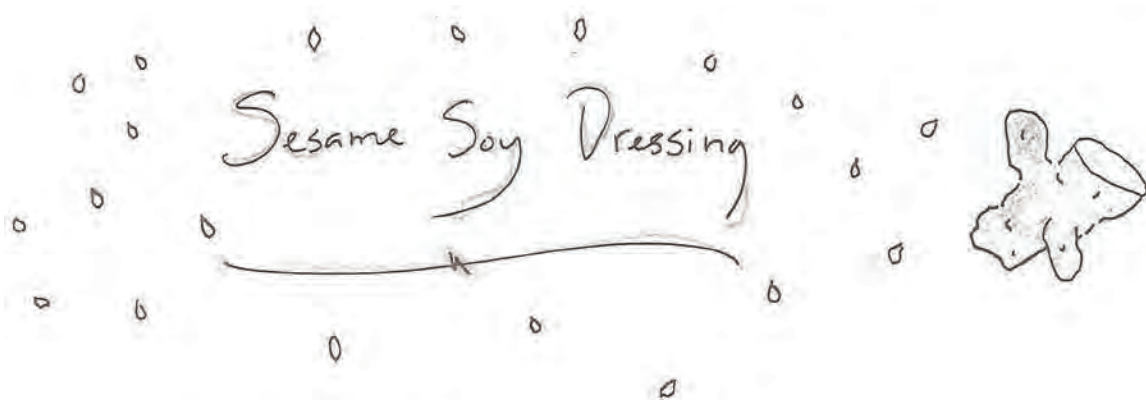
1 inch strip of lemon peel - use a potato peeler for this

1 teaspoon salt

$\frac{3}{4}$ cup extra virgin olive oil

In a medium sized bowl, combine orange juice, rice vinegar, shallot, lemon peel and salt. Add the olive oil by pouring in a thin stream, while whisking constantly. This dressing is best if made ahead to allow the flavors to develop. Makes approximately $1\frac{1}{4}$ cups.





$\frac{1}{4}$ cup soy sauce

$\frac{1}{8}$ cup water

1 tablespoon sugar

2 tablespoons sesame oil

2 tablespoons toasted sesame seeds

1 teaspoon minced ginger

Combine all ingredients in a mixing bowl
and whisk well.

MUSTARD MISO DRESSING

- 2 tablespoons yellow or white
miso paste
- 1 tablespoon Honey
- 1 tablespoon dijon mustard
- 2 tablespoons rice vinegar
- 1 tablespoon toasted sesame oil

Put the ingredients in a jar and
shake it up! Pour over
anything + everything

Debate Plate: Justice and Labor

In the Academic Classroom

Summary

In this eighth-grade humanities lesson, students watch a short video about the 2010 fight by the Coalition of Immokalee 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 officials, and food system workers play in working for a more just food system. This is the third in the Debate Plate lesson series, a five-lesson series that focuses on factors and considerations that influence personal food choices and the impacts of those choices.

Objectives

After this lesson, students will be able to:

- ▶ Understand that their food choices as consumers impact other people within the food system.
 - ▶ Discuss the relative proportion of the money they spend on food that goes to each player in the food system, and compare how these proportions vary depending on the characteristics of the food system.
 - ▶ Begin to form opinions and build arguments around the theme of justice/injustice in the food system, and consumer responsibility in regards to food choices.
-

Assessments

During this lesson, students will:

- ▶ Connect consumer choices to farmworkers' lives by reflecting on the impact paying one penny more per pound for tomatoes would have on the Immokalee Workers' pay after watching a video by the Coalition of Immokalee Workers (CIW).
- ▶ Create posters summarizing the steps involved and wealth distribution breakdown for an average U.S. food product from farm to plate after reading an excerpt from "Where Does Your Grocery Money Go?"
- ▶ Discuss their thoughts, reactions, and opinions in regards to the CIW video and "Where Does Your Grocery Money Go?" article.

Materials

- ☑ Supporting information handout (food system graphic and food system quote)
 - ☑ Poster paper and art supplies
 - ☑ Laptop, projector, and speakers to play Immokalee workers video
-

Procedures

1. Welcome students to the classroom. “This week we’ve been talking about factors and considerations that influence food choices. Today we’ll be diving more into some of the impacts of those food choices on other people by talking about labor and justice issues in the food system.”
2. When I say “labor,” what does that mean to you? Define “labor.”
3. So when we’re talking about labor in relation to the food we eat, what, or who, do you think we could be talking about? To put it another way, who are some of the people who work on getting food from the farm to your plate? Tell students this is just a preliminary list that you’ll add onto as the class goes on.
4. And what about “justice”? What does justice look like or mean? What does injustice look like or mean? Define “justice” and “injustice.”
5. Today in looking at labor and justice in the food system, we’ll be focusing mostly on the work that farmers and farmworkers do and the compensation they receive for that work. Clarify that “farmers” usually refer to the people who run the farms, and they may or may not actually work in the fields, and “farmworkers” are paid by the farmers to do manual labor on the farm—anything from planting to fertilizing, spraying pesticides if the farm is not organic, and harvesting.
6. In 2011, a group of farmworkers in Immokalee, Florida, launched a Campaign for Fair Food to fight for higher wages. If you have ever eaten a tomato in the winter, it probably came from Florida, and possibly was picked by one of these workers.
7. Watch Immokalee workers video (https://www.youtube.com/watch?v=VURs-rsi_KQ).
8. Hopefully that gives you a sense of the type of work farmworkers do, and the conditions workers face on the job. In that video, the workers were asking for just one penny more per pound that they picked. Now we’re going to jump into some specifics on where the money that you spend at the grocery store goes.
9. Introduction to supporting information handout:
 - ▶ In the industrial food chain, “for every dollar we spend on food, only about 16 cents goes to the farmer. The other 84 cents goes to the chain that brings the food from farm to plate: the diesel and truck and driver that move the food from farm to processing plant or warehouse; the mill or the factory where food is processed, or the cost of storing it until it is sold. They also pay for the people who sell it wholesale or to grocers, the restaurant cooks who prepare it for us when we eat out, the satellite and databases to track shipments, and the workers, forklifts,

warehouse and refrigeration at the grocery store. For example, in 2008, shoppers paid about 67 cents for every pound of onions they bought, with about 13 cents going to the farm (19% of what shoppers paid). The workers who picked the onions got between 1 and 2 percent, or just about one penny per pound.”

- ▶ In a less-industrialized food cycle with fewer people and processes between the grower and consumer, a much larger proportion of your food dollars – even up to 100% - goes directly to the farmer and farmworkers.
- ▶ Source: McMillan, Tracie. “Where Does Your Grocery Money Go? Mostly Not to the Farmers.” Eatocracy. CNN Online. August 8, 2012. <http://eatocracy.cnn.com/2012/08/08/where-does-your-grocery-money-go-mostly-not-to-the-farmer/comment-page-1/>

10. Choose one of the following activities (or do both, time permitting):

- ▶ Make-a-poster activity:
 - ▶ Students make posters summarizing what they think is the most important or interesting information for people to know about labor and justice in the food system based on the video and article.
 - ▶ If there is time, students share the posters with the whole class or in small groups.
- ▶ Discussion: Teacher leads discussion based on any of the following questions:
 - ▶ Should consumers be responsible for knowing about their food in terms of justice around production and labor practices?
 - ▶ Should consumers be responsible for buying food from responsible sources? Paying more for food?
 - ▶ Is it the government’s responsibility for making laws around fair pay?
 - ▶ What might barriers to making “responsible” consumer choices be?
 - ▶ What would be a deal-breaker for you around supporting a company or product?
 - ▶ What is the responsibility of the consumer in terms of being informed about their food?
 - ▶ Are there any things you have learned about food that affect how you make food choices?
 - ▶ Are there areas you feel are more or less important to be informed?
 - ▶ Are there disagreements in your family about food choices?
 - ▶ Are there any things that you would change about how you eat or the food available to you, but are not able to?
 - ▶ Have you experienced not being in control of the decisions that affect your conscience as a consumer?
 - ▶ Do you have a conscience as a consumer?

- ▶ What are the areas that you do feel empowered to make choices around what you consume?

11. Thank students for their participation in the class, and tell them that they'll continue to explore the theme of labor and justice when they return to the Kitchen.

Vocabulary

- ▶ Justice
 - ▶ Labor
 - ▶ Farmer
 - ▶ Farmworker
 - ▶ Consumer
 - ▶ Wealth distribution
 - ▶ Industrial food chain
 - ▶ Grower
 - ▶ Distributor
-

Connections to Standards

COMMON CORE: READING STANDARDS FOR INFORMATIONAL TEXT, GRADE 8

RSI.8.2. 2. Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.

CALIFORNIA STATE COMMON CORE, SPEAKING AND LISTENING STANDARDS, GRADE 8

- SL.8.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
 - SL.8.1.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.8.1.b.** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.8.4** Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
- SL.8.5.** Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

COMMON CORE: READING STANDARDS FOR TECHNICAL TEXT, GRADE 8

RST 6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

EDIBLE SCHOOLYARD 1.0 IN THE EDIBLE SCHOOLYARD PROGRAM:

Tools 1.1. Engage in structured groups to complete tasks and practice teamwork.

Tools 1.2. Make positive contributions to small group discussions.

Tools 1.3. Communicate relevant questions to classmates; build language and listening skills by practicing self-control, self-awareness, and noticing our impact on others.

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.

Resources

Immokalee workers video: https://www.youtube.com/watch?v=VURs-rsi_KQ

McMillan, Tracie. "Where does your grocery money go? Mostly not to the farmers." Eatocracy.

CNN Online. August 8, 2012. <http://eatocracy.cnn.com/2012/08/08/where-does-your-grocery-money-go-mostly-not-to-the-farmer/comment-page-1/>



Where does your grocery money go? Mostly not to the farmers

By Tracie McMillan

CNN.com *eatocracy* • Aug. 8, 2012

A few months ago, a small farmer in the Northeast approached me at a conference, intense and red-faced. How could I say that Americans shouldn't pay more for their food?

She sold lettuce and beets to well-heeled women, their ears dangling gold and fingers sporting diamonds. Yet many of them balked at the prospect of paying an extra dollar per pound. To grow her food without extensive chemicals, and to sell her wares at market, she needed to fetch a higher price. Surely, couldn't these women pay more?

Well, yes, I conceded, those women could probably afford to pay more. That doesn't mean we have to. Because it's not the farmers who get most of the money we spend on food. It's everyone who's standing past the farm gate.

When we buy food, we think we are paying the farmer. This is true in a very basic economic sense: some portion of what we spend at the store does trickle back down to the hands that worked the land. Understandably, we think that if food costs more, it must be because the farmer is getting more for it.

There might be good reasons for prices to rise — **the worst drought in a half-century**, for instance — or there might be profiteering reasons for it — padding a supermarket's bottom line. But the base assumption is that when we pay more, the farmer makes more.

The problem is, that is almost entirely untrue.

The breakdown

For every dollar we spend on food, only about 16 cents goes to the farmer. The other 84 cents go towards what economists call "marketing," which refers not to commercials and advertising, but the entire chain that ensures food makes it from farm to plate.

Those 84 cents pay for the diesel and truck and driver to move the food from farm to processing plant or warehouse; the mill or the factory where food is processed, or the cost of storing it until it is sold. They also pay for the people who sell it wholesale or to grocers, the restaurant cooks who prepare it for us when we eat out, the satellite and databases to track shipments, and the workers, forklifts, warehouse and refrigeration at the grocery store.

Take, for instance, the humble onion. In 2008, shoppers paid about 67 cents for every pound of onions they bought, with about 13 cents going to the farm, meaning that the farm got 19 percent of what shoppers paid. (The workers who picked the onions got between 1 and 2 percent, or just about **one penny per pound**.)

Across all vegetables, the average share paid to farmers is **more like 25 percent**; fresh fruits pay an average of **30 percent to the farmer**. All the rest of it went to distribution, logistics, overhead — everything that it takes to get food from farm to plate.

Distributing wealth

Today, nearly all our meals arrive in our neighborhoods via supermarkets (or supercenters, the term for operations like Walmart and Target that also sell groceries). Those two kinds of stores sell about 80 percent of our food. Walmart, the biggest supermarket in the country, sells roughly one-quarter of the food bought in the U.S., making it the largest grocer in our history (and that of the world).

But by selling food, supermarkets have also become a de facto infrastructure for distributing it — a fact not lost on Walmart executives.

"The misconception is that we're in the retail business," Jay Fitzsimmons, a senior vice president and treasurer for Walmart, told investors in 2003. But in reality, **"We're in the distribution business."**

Bringing distribution in-house is a big part of why Walmart now ranks as America's largest grocer. When the mega-retailer expanded into food in the late 1980s, it set off a wave of consolidation within the supermarket industry as competitors scrambled to match prices. To stay in the game, most had to follow Walmart's example and bring distribution in-house, a feat that only mega-sized companies could readily afford.

The little guy takes a hit

Local mom-and-pop grocers went out of business, and struggling chains merged or got bought by bigger ones; giant chains correspondingly gained market share. By 1998, 49 of the 50 largest supermarkets in the country handled their own distribution — and **saved from 25 to 60 percent** on operations as a result.

When little grocers went out of business, so did small and mid-size farmers. The new crop of bigger food retail outlets needed bigger quantities of food — more than a single, smaller grower could provide. Some farmers (including MacArthur “Genius Grant” recipient **Will Allen**) abandoned supermarkets altogether and found other ways to sell their goods — usually direct marketing like farmer’s markets and community supported agriculture clubs.

But many simply went out of business; the number of mid-sized farmers dropped by about 13 percent from 1997 and 2007 — and their share of sales dropped by 39 percent. Meanwhile, the number of big farmers inched up by 7 percent, but their market share skyrocketed, and they went from selling us half our food to **nearly three-quarters of it**.

The important thing here is to look at why they’ve been so successful: they built, and therefore shrank the cost of, distribution networks.

Closing the gap

That’s actually part of what the red-faced farmer from the conference was talking about. She was selling at a farmer’s market in part because there is a dearth of infrastructure available to move food between small-to-midsized farms and plate. Infrastructure is one of the biggest and most expensive obstacles to expanding local agriculture.

And this is where it gets interesting: maybe the key to feeding America well, and from its own farms, is not to send everyone to the farmers market. Maybe it’s not joining **CSAs**. Maybe it’s coming up with a way to reduce the distribution costs for modest American farmers and grocers. Because if we can find some wiggle room in the 70 to 85 percent of the purchase price that goes to that, chances are there would be room to send a little more back to the farm.

And what that means — sorry for the wonkery here, but it has to be said — is coming up with an affordable infrastructure for modest American farmers and grocers so they have a fighting chance when competing against the giants.

How to keep the money down on the farm

As individual shoppers, making that happen can be tough. The easiest thing to do is prove that there’s a market for good, locally grown food in your community at an affordable price. This helps to prove to people in power — supermarket executives, government bureaucrats with budget lines — that it’s a worthwhile investment.

Patronizing farmers markets is one option; in-season produce tends to be affordable, in part because the middle-man has been removed from the equation. (One caveat: “affordable” is a loose term. During a lean and writerly year in Detroit I took a notepad with me to the farmer’s market for a week, jotted down prices, and compared them at a local market, so I knew when I was getting a good price and when I needed to make do with supermarket fare.)

Asking your local grocer where and how they get their produce — and suggesting that you’d like to see **more from local growers** — never hurts. (As a former supercenter produce worker, though, I cannot guarantee that it will help, either.)

The problem is that making good food easy and affordable is a challenge that won’t be solved by your shopping cart alone. There are some promising, larger efforts already underway: the emerging **farm-to-cafeteria movement** is a stealth infrastructure project, connecting small and midsize farmers with stable, institutional purchasers who can give them more economic stability than farmer’s markets. And some of the nation’s most lauded farmers markets are already part of a USDA project called **Food Hubs**, an interesting mix of public and private funding designed to link American farmers with retail and wholesale buyers and eaters.

Showing public support for those programs, helping them to succeed, and calling for better ones are the only way we’re likely to reach a better balance in that farm-marketing split — moving it, ideally, so that it lands a bit more on the farm, where it belongs.

tagged in: **agriculture & farming, CNN.com, food systems, labor**

Where Does Your Grocery Money Go?

1. What is the “intense and red-faced” farmer’s argument for why Americans should pay more for their food?
2. How does the author respond to that argument?
3. Jay Fitzsimmons, a senior vice president and treasurer for Walmart, is quoted in this article as saying Walmart is not “in the retail business...We’re in the distribution business.” What does he mean by that?
4. Over the last 50 years, more and more big chains have gotten into the “distribution business” like Walmart. How has this impacted small grocers and small and mid-size farmers?
5. What does the author argue would be necessary to better support small and mid-size farmers?
6. Where does your grocery money go? Use the information in this article to make a poster that illustrates an answer to this question.

Debate Plate: Justice and Labor

Broccoli Macaroni and Cheese and Lemonade

Summary

In this eighth-grade humanities lesson, 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. This is the fourth in the Debate Plate lesson series, a five-lesson series that focuses on factors and considerations that influence personal food choices and the impacts of those choices.

Objectives

After this lesson, students will be able to:

- ▶ Describe a range of jobs that people have within the food system.
 - ▶ Explain how the more highly processed a food is, the smaller a proportion of the cost of the food will go to the farmer.
 - ▶ Explain how multiple factors interact to inform any given food choice, and that there is no such thing as a “good,” “bad,” “right,” or “wrong” food choice.
-

Assessments

During this lesson, students will:

- ▶ Brainstorm jobs held by people working in the food system.
- ▶ Explain why the farmers involved in producing ingredients for from-scratch macaroni and cheese receive so much more money proportional to cost than farmers that produce ingredients for boxed macaroni and cheese.
- ▶ Identify from-scratch, Kraft, or Annie's mac and cheese as the best choice in a variety of hypothetical situations.

Materials

FOR THE CHEF'S MEETING

- "Debate Plate" visual aid
- Variety of mac and cheese products
- Mac and Cheese recipe
- Lemonade Recipe

FOR THE ACTIVITY

- Food choice consideration "lens" cards

INGREDIENTS FOR THE MACARONI AND CHEESE

- Pasta
- Day-old crusty bread
- Broccoli
- Garlic
- Rosemary
- Olive oil
- Cheese (cheddar or jack)
- Milk
- Butter
- Flour
- Salt
- Pepper

INGREDIENTS FOR THE LEMONADE

- Lemons
- Sugar or honey
- Water
- Ice cubes (optional)
- Mint (optional)

TOOLS

- Heavy-bottomed stockpot
- Saucepan
- Wooden spatulas
- Chef's knives
- Paring knives
- Cutting boards
- Measuring cups
- Measuring spoons
- Mixing bowls
- Garlic peeler
- Whisk
- Baking dish
- Pitcher

EQUIPMENT

- Stove
- Oven

Procedures

1

AT THE CHEF MEETING

1. Welcome students back to the kitchen. Remind students of the overarching questions of the week: What factors influence what we eat, and what are the impacts of those choices? Prompt students to recall the themes they have covered so far: Health & Nutrition, Environment, and, yesterday in the classroom, Labor & Justice. Explain that today we will be continuing their discussions from the previous day on Labor & Justice and making macaroni and cheese and lemonade.
2. Define labor and justice as a lens for thinking about food choices: How do our food choices impact other people? This is a big topic. Estimates say that 20 million people in the US work in the food system. Our food choices have real impacts on the lives of these people.
3. Who are these people? What do they do? Ask students to brainstorm a few of the jobs people have within the food system (farmer, farmworker, meat packer, grocery

store worker, food scientist, corporation executive, truck driver, restaurant cook, packaging designer, etc.).

4. Today we are going to focus on farmers. Specifically, we are going to compare how your choice between three different kinds of macaroni and cheese impacts the farmers involved in producing the ingredients for them. Who are the farmers involved in making macaroni and cheese? Wheat farmers and dairy farmers.
5. We did some research to find out where your money goes when you buy these three different kinds of macaroni and cheese. Specifically, we wanted to know, for each of these choices, how much of what you spend ends up going to the farmer? Introduce and explain how to read the visual aid (all the numbers still covered).
6. Start on the left with Kraft. Ask for students to make predictions about how much money will go to the dairy and wheat farmers involved in making cheese and pasta for Kraft. Reveal the amounts for Kraft. Ask students to respond to what they see: Does this seem like a lot or a little? Clarify that these numbers do not represent profit for the farmers. This is what farmers are paid for their raw products. What costs must the farmer cover with this money?
7. Ask for students to make predictions for Annie's. Do they think farmers will receive more or less than they do for Kraft? Why? Reveal numbers for Annie's. Ask for students to explain the similarities in farmer pay between Annie's and Kraft, and to explain the higher cost of the Annie's product. Where does that money go? Is this what they expected to see?
8. Ask for students to make predictions for the from-scratch mac and cheese. Reveal the amounts. Ask for students to explain the significantly higher amount received by the dairy farmer and the equal amount received by the wheat farmer. Explain that processing milk into cheese happens in-house at the creamery that we buy our cheese from. This means that the farmer keeps everything that doesn't go to the grocery store where we bought the cheese. Ask students whether this means that the from-scratch farmer makes a larger profit than the Annie's or Kraft farmers. Not necessarily—the from-scratch farmer has much higher overhead costs processing milk to cheese as opposed to just producing milk.
9. Ask for students to reflect on what they have just learned, and consider the fact that the average annual salary for managers at dairy processing plants is about \$125,000 (about \$50 an hour) while the average annual salary for dairy farmworkers is about \$25,000 (about \$11 an hour), one-fifth of what managers make. Ask students to consider that choosing between these macaroni and cheese options is about more than who gets how much money—it is also about what kind of food system you choose to support.
10. Ask students: If you are looking to support farmers, what's the best choice? From-scratch. What about if you are looking for the most budget-conscious option? Kraft. What if convenience is your top priority? Kraft or Annie's. And what if protein content is important to you? From-scratch.

11. There is no objective “best choice.” We’ve seen today how different choices impact farmers differently and help to support different kinds of food systems that treat the people in them differently. If labor and justice is your main consideration, being informed about how the people who make your food are treated will be important as you make your choices. Ultimately, every time you eat, the best choice will vary based on your priorities. In this case, just like on Monday and Tuesday, more information empowers you to make choices that align with your priorities in any given moment.
12. Ask students to wash their hands and go to their table groups.

2 AT THE TABLE

1. Small-group check-in: What is your favorite way to eat pasta or noodles? What is your favorite kind of cheese?
2. Introduce jobs for the day in more detail. Describe how making a roux is a versatile cooking technique that can be used to thicken many kinds of sauces and stews and serves as the basis for many foods, such as hollandaise and gumbo.
3. Have students choose cooking jobs.
4. Cook.
5. Eat. While eating, potential discussion topics include:
 - ▶ Is this a recipe you would make at home? Does knowing about the “justice and labor audit” of the different kinds of macaroni and cheeses impact which one you would choose to make? Why or why not?
 - ▶ Do consumers have a responsibility to be informed about the food they eat? Why or why not? Should it be the consumer’s responsibility to do research to inform themselves or should producers be held responsible for educating their consumers?

3 AT THE CLOSING

1. Ask students to use their fingers to rate the food on a scale of 1 to 5.
2. If there’s time, reflect on discussions from the small table groups.

Teaching Notes

Macaroni and cheese: Students are very excited to make this familiar food. They may also be skeptical that a from-scratch version can be delicious as well.

Labor and “justice”: We wanted this lesson to get to the theme of justice, but we don’t feel that we made it there with this version, which focuses mostly on labor. We are excited to bring the theme of justice more explicitly to the front of this lesson next year.

Support students to do the thinking work: We found the Chef Meeting to be highly successful when we really encouraged students to explain what they were observing and interpreting from the visual aid. The visual aid supports them well to reach a variety of important and interesting conclusions.

Cardboard boxes: Having the actual mac and cheese boxes as examples for the Chef Meeting helps to generate enthusiasm and interest among students. We always make a point to let students know that they're empty because we ate them already. This reinforces the tone of nonjudgment/non-food shaming we aim to create in our classroom.

Food shaming: The goal of this lesson was to provide information that would empower students to feel a greater sense of agency around their food choices. We explicitly sought to avoid food shaming students at any time.

Cheese sauce: By simplifying the cheese sauce recipe instead of making a traditional roux, we make it more failproof. Experiment with different flavors by trying this recipe with any cheese that melts well.

Grating cheese: Sometimes students have a hard time using the grater. Show them that applying pressure into the grater gives you better product and makes the process more efficient. It can also be helpful to remind them that they don't have to grate into a cup measure—grate onto a plate and then measure.

Dietary restrictions: We always have gluten-free noodles on hand, as well as vegan cheese, so that every student can enjoy the meal. If for any reason we don't have appropriate substitutes, we'll offer a piece of fruit.

Broccoli: Many students are skeptical of this variation from tradition. Sometimes we point out that it's simply another vessel for cheese sauce, or suggest that it get cut in larger pieces so if they really don't like it they can eat around it. Despite any initial trepidation, we find that generally students really like it.

Brainstorming other uses for cheese sauce: This can be a fun way to generate enthusiasm and creativity.

Bread crusts: The bread crusts leftover after preparing the bread crumb topping are excellent for dipping in the cheese sauce. Students also get very excited about enjoying them with a simple olive oil and salt dip.

Lemonade: The first time we taught this lesson, we just made mac and cheese and often classes would finish early and have a little too much idle time. We found that the lemonade recipe added the perfect number of jobs and that students were very excited to make it.

Simple syrup: We like to show students how to make a simple syrup for the lemonade so the sugar doesn't collect at the bottom of the pitcher.

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.

Highlighting recipe sections: This mac and cheese recipe contains a number of moving parts. We like to highlight either the cheese sauce, the macaroni and broccoli, or bread crumb topping section on each recipe we print out. This helps students identify which specific steps they are responsible for, and enables them to work more independently.

Salting water: Share with students what a difference to flavor it makes to salt the water before cooking the macaroni and broccoli.

Cooking the broccoli: Add the broccoli into the pasta when it is a few minutes from being done as opposed to cooking it separately to save time.

Talking mac and cheese: Asking students about how they like to eat their macaroni and cheese can be a great conversation starter. Many students will have experience eating or making this food. If you were to make this at home, what would you add or take away?

Vocabulary

- ▶ Producer
 - ▶ Processor
 - ▶ Consumer
 - ▶ Distributor
 - ▶ Labor
-

☑ Connections to Standards

CALIFORNIA STATE COMMON CORE, SPEAKING AND LISTENING STANDARDS, GRADE 8

- SL.8.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- SL.8.1.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.8.1.b.** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.8.4** Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

CALIFORNIA STATE COMMON CORE, READING STANDARDS FOR LITERACY IN HISTORY/ SOCIAL STUDIES 6-12

- RSH 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.

CALIFORNIA STATE COMMON CORE, READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS

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

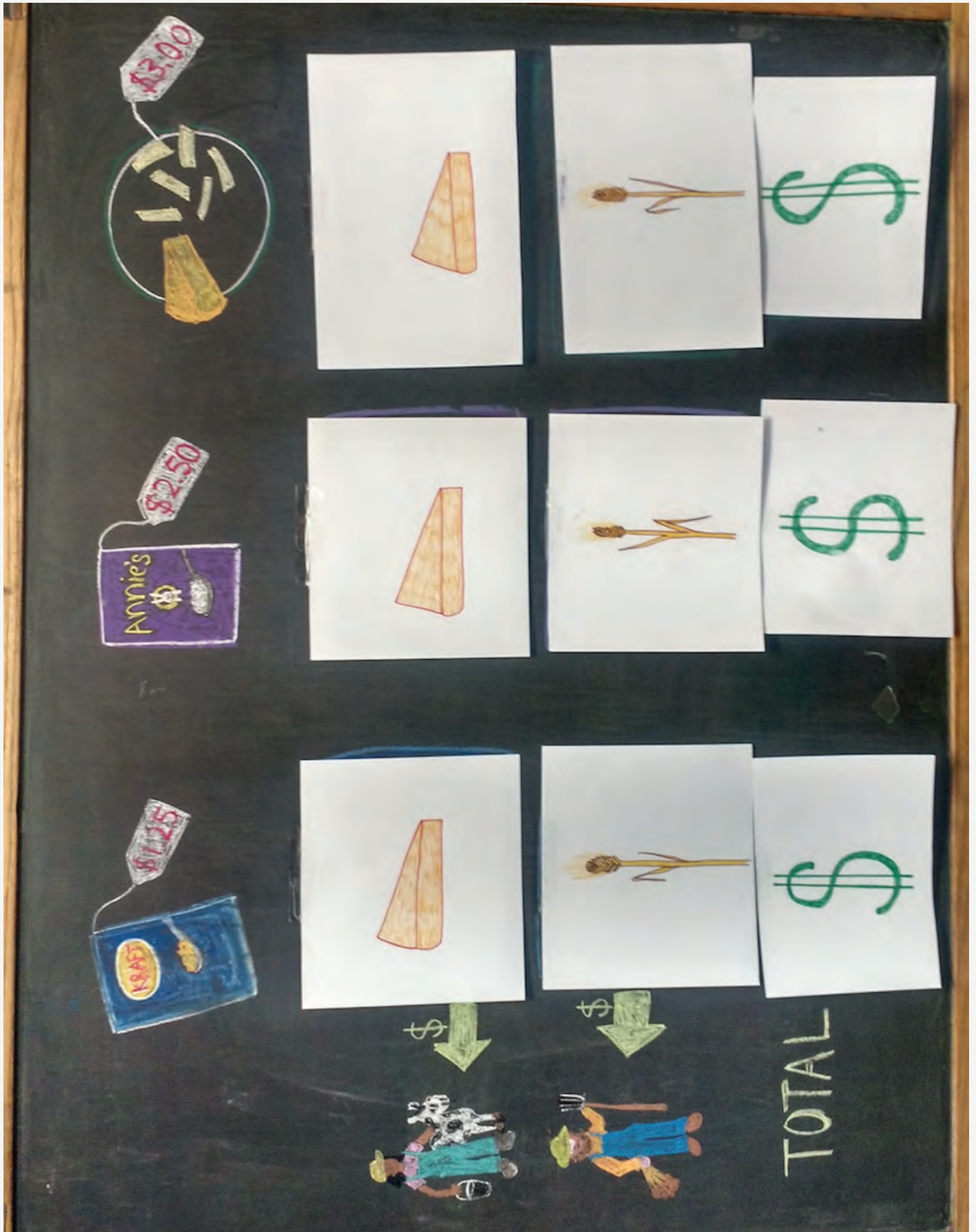
RST 6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

ESY STANDARDS, GRADE 8:

- 2.1.1.** Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently.
 - 2.3.8.** Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.
 - 2.3.9.** Collaborate to identify, choose, and complete jobs to execute recipes, and explain each individual contribution to the end result.
-

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.



Item	Weight	Conventional Price	Organic Price	Organic %
KRAFT (Blue Bag)	0.95 oz	10¢	13¢	10.4%
Annie's (Purple Bag)	1.1 oz	12¢	17¢	7%
Organic (Green Box)	2.7 oz	\$2.17	\$2.22	72.1%
Organic (Green Box)	1/3 pound	5¢	5¢	1.7%
TOTAL				

\$1.25 (KRAFT)
 \$2.50 (Annie's)
 \$3.00 (Organic)
 (CONVENTIONAL)
 (ORGANIC)
 (CONVENTIONAL)
 (ORGANIC)
 (CONVENTIONAL)
 (ORGANIC)

TOTAL: 13¢ (10.4%)
 17¢ (7%)
 \$2.17 (72.1%)
 \$2.22 (73.7%)

\$
 \$

HOME MADE



MAC AND CHEESE



WITH
BROCCOLI

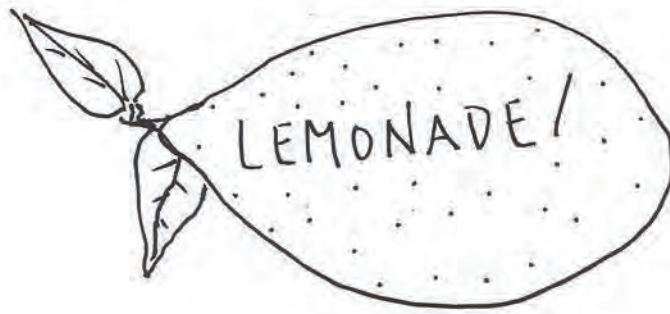
- 1 pound pasta, cooked
- 1 head broccoli, cut into florets
- 1/4 cup butter
- 1 1/4 cup warm milk
- 1/4 cup flour
- 2 cups cheese, grated
(a mix of jack and cheddar)
- 2 teaspoons salt
- 1/2 teaspoon pepper

- BREAD CRUMB
TOPPING
- 1 1/2 loaf day old bread,
crust removed and
torn into small pieces
 - 1/4 cup olive oil
 - 4 cloves garlic, minced
 - 1 table spoon rosemary,
minced
 - 1 salt and pepper

Melt the butter in a sauce pan over medium heat. Stir the melted butter into the warm milk and whisk in the flour. Add the grated cheese, broccoli, salt and pepper. Pour the cheese over the cooked pasta. Mix well and place in a baking dish.

In a large mixing bowl, toss the bread crumbs with the olive oil, garlic, and rosemary. Add salt and pepper to taste. Spread the bread crumb mixture evenly over the mac and cheese.

Bake in the oven at 350° until the cheese is bubbling and the bread crumbs are golden brown.



6 CUPS WATER

1/2 CUP SUGAR OR HONEY

ZEST OF 2 LEMONS

JUICE OF 6 LEMONS

2 CUPS ICE CUBES

FRESH MINT FOR GARNISH

POUR WATER INTO A LARGE PITCHER, ADD THE SUGAR OR HONEY AND STIR TILL IT DISSOLVES. ADD LEMON ZEST, LEMON JUICE AND THE ICE CUBES AND MIX WELL. GARNISH WITH FRESH MINT.

OPTION: ADD A DROP OF VANILLA EXTRACT FOR A DEEPER FLAVOR.

Food Priority Card Questions

1. **Texture** – the texture of a food
2. **Interpersonal relationships** – when you make decisions about what to eat based on the desires, needs, recommendations or preferences of others
3. **Habit** – what you're used to eating (or not eating) – your familiarity or routines with a food
4. **Taste** – how a food tastes
5. **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
6. **Cost** – how cheap or expensive a food is
7. **Environment** – how the food or the processes involved in making it available to you impacts the environment
8. **Ease or convenience** – how easy and convenient it is to access or prepare a food, or the time and labor required to do so
9. **Culture or identity** – what a food represents to you, or its connection to your culture or identity
10. **Animal Welfare** – how a food or the processes involved in making it available to you impacts animals
11. **Justice & Labor** – the wages, working conditions and rights of the people involved in growing, processing, distributing or preparing a food
12. **Past experience** – the memories or nostalgia you associate with a food or eating experience
13. **Health & Nutrition** – how a food impacts your health
14. **Appearance** – how a food looks
15. **Smell** – how a food smells
16. **Sound** – the sound a food makes while you're preparing or eating it (example: the crunch of biting a carrot or squeak of chewing certain cheeses)
17. **Weather** – how the weather impacts what you eat
18. **Season** – how the time of year impacts what you eat
19. **Time of Day** – how the time of day impacts what you eat
20. **Mood** – how your mood impacts what you want to eat

Debate Plate: Cost and Access

Chili and Cornbread

Summary

In this eighth-grade humanities lesson, students make Vegetarian Chili and Cornbread 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 is currently a right, a privilege, or a responsibility, and whether it should be. This is the fifth in the Debate Plate lesson series, a five-lesson series that focuses on factors and considerations that influence personal food choices and the impacts of those choices.

Objectives

After this lesson, students will be able to:

- ▶ Explain and give examples of how food access may be restricted.
 - ▶ Construct and defend an argument on the question of whether access to healthy, sustainably produced, and socially just food is a right, a privilege, or a responsibility and whether it should be.
 - ▶ List and describe a wide variety of considerations they have when deciding what to eat, discuss the factors that influence how they prioritize those considerations, and discuss with examples the role nutritional, environmental, and justice concerns play in their food decisions and whether those roles have changed over the course of the Debate Plate lesson series.
-

Assessments

During this lesson, students will:

- ▶ Brainstorm forms of food access.
- ▶ Debate the questions of whether accessing healthy, sustainable, and socially just food is a right, a privilege, or a responsibility and whether it should be.
- ▶ List and describe a wide variety of considerations they have when deciding what to eat, discuss the factors that influence how they prioritize those considerations, and discuss with examples the role nutritional, environmental, and justice concerns play in their food decisions and whether those roles have changed over the course of the Debate Plate lesson series.

Materials

FOR THE CHEF'S MEETING

- ☑ "Debate Plate" visual aid
- ☑ Chili and cornbread recipes

FOR THE ACTIVITY

- ☑ Food choice consideration "lens" cards

FOR THE CLOSING

- ☑ Small pieces of paper and pencils for exit ticket:
- ☑ What was a main takeaway for you this week?
- ☑ What is something you learned this week that surprised you?
- ☑ What is a question you still have about something you learned this week?
- ☑ What is something you learned this week that made a personal impact on you?

INGREDIENTS FOR THE VEGETARIAN CHILI

- ☑ Assorted cooked beans (black, kidney, chili, red)
- ☑ Olive oil
- ☑ Onions
- ☑ Garlic
- ☑ Carrots
- ☑ Bell pepper
- ☑ Crushed tomatoes (canned or fresh)
- ☑ Ground cumin
- ☑ Chile powder
- ☑ Dried oregano
- ☑ Tomato paste
- ☑ Bulgur
- ☑ Salt

INGREDIENTS FOR THE CORNBREAD

- ☑ Flour
- ☑ Cornmeal
- ☑ Baking powder
- ☑ Baking soda
- ☑ Salt
- ☑ Eggs
- ☑ Butter
- ☑ Buttermilk
- ☑ Honey

TOOLS

- ☑ Heavy-bottomed stainless steel pot
- ☑ Cast-iron skillet
- ☑ Small saucepan
- ☑ Wooden spatulas
- ☑ Chef's knives
- ☑ Paring knives
- ☑ Cutting boards
- ☑ Measuring cups
- ☑ Measuring spoons
- ☑ Mixing bowls
- ☑ Graters
- ☑ Peelers
- ☑ Reamers
- ☑ Mortar and pestles (for grinding spices if not already ground)

EQUIPMENT

- ☑ Stove
- ☑ Oven

Procedures

1

AT THE CHEF MEETING

1. Welcome students back to the kitchen. Review overarching questions of the Debate Plate unit: What factors influence your food choices? What impacts do those choices have on your body? On the environment? On other people? Introduce the theme of the day: Cost & Access.
2. Explain that cost and access are slightly different from the other considerations we've discussed so far in Debate Plate because while they sometimes might be elective

considerations—maybe you really love a good deal, so you choose to buy Kraft instead of Annie’s mac and cheese—other times they are non-elective considerations, meaning you don’t have a choice—you’d really like to buy Annie’s mac and cheese because reducing your environmental impact is important to you and Annie’s uses organic pasta, but that extra \$1.25 is more than you can afford, so you must buy Kraft instead. In this case the cost of food has impacted the choice you made, but it’s not by your personal choice.

3. Explain that access is related to cost, but can also be much broader. Ask students: What are different forms of access? What kinds of things might get in the way of me being able to choose certain foods? Generate a list of different forms of (in)access, such as:

Geographic access: Do you have any grocery stores close to you? What food is available at those grocery stores? How difficult is it to transport food from your source to your home?

Cost access: Can you afford a food?

Knowledge access: Do you know where to get food or how to grow it? Do you know how to prepare the food you want to eat? Do you know how to prepare the ingredients available to you?

Equipment and tools access: Do you have a place, equipment, and tools to prepare food? Do you know how to use the equipment and tools you have available? Do the equipment and tools you have work?

Cultural access: Is culturally relevant food available to you? Do you know where to find food that is culturally relevant to you?

Transportation access: Do you have a way to transport yourself and your food between the place you get it and your home? Can you afford to pay for transportation?

Health/allergy access: Is food that is good for your health available to you?

4. Explain that once you start considering issues of food access and looking at who has access to food, who doesn’t, and why, this raises some very large conversations around justice. These questions are where we’ve been heading all week. They integrate all the topics we’ve looked at in Debate Plate so far.
5. Think-Pair-Share: Do you think that access to food that is good for you, good for the environment, and good for other people is currently a right, a privilege, or a responsibility? Explain that this question asks for some higher-level thinking, and that there are no objectively right answers. Give students some time to reflect quietly to themselves, and then turn to a neighbor to discuss. Finally, bring everyone into a full-class discussion.
6. Ask students to discuss whether they think that food that is good for you, good for the environment, and good for other people should be a right, a privilege, or a responsibility.

7. Thank students for their participation in the discussion. Emphasize that these questions have many answers and that answering them fully may be an ongoing process over the course of a long time. Encourage students to keep digging into these questions because as they have seen over the course of Debate Plate, our food choices have major impacts and connect to almost every aspect of our world. Over the course of a lifetime, becoming informed about the impacts your food choices have and choosing to be intentional about what you eat can create real, important impact. Learning about your food gives you real power to change the world.
8. Ask students to wash their hands and go to their table groups.

2

AT THE TABLE

1. Small-group check-in: If you could only eat one food for a year, what would you want to eat?
2. Introduce jobs for the day in more detail. Describe how chili can really be made with anything you have on hand. Just like with the spiced red lentils and Indian-spiced coleslaw, we'll be cooking the chile powder in oil at the very beginning along with onion and garlic to help the depth of the flavor infuse the whole dish.
3. Split up into cooking jobs.
4. Cook.
5. Eat. While eating, potential questions to discuss:
 - ▶ Has there ever been a time when you have wanted to cook something from the ESY kitchen at home but have been unable to do so? What are some barriers that you encountered? These are all forms of access.
 - ▶ What are your top considerations when choosing what to eat? Why?
 - ▶ Has anything you learned this week stuck out to you, made an impact on you, or changed how you think about your own food choices?
6. Clean up.

3

AT THE CLOSING

1. Ask students to rate the food using their fingers on a scale of 1 to 5.
2. Exit ticket (students choose one question to respond to and write it on a sticky note at any time during class and given to the Kitchen Teacher. It won't be public and can be anonymous):
 - ▶ What was a main takeaway for you this week?
 - ▶ What is something you learned this week that surprised you?
 - ▶ What is a question you still have about something you learned this week?
 - ▶ What is something you learned this week that made a personal impact on you?

Teaching Notes

As we talk about cost in this lessons, we wanted to share how much we had spent on our meal. We calculated the total cost for one batch of cornbread at \$3.05, or \$0.31 per serving. The cost for one batch of vegetarian chili was \$9.10, or \$0.91 per serving. This brought our total cost for the meal to \$12.15 per group, or \$1.21 per serving. We share that this is just inside our target of \$1.25 per student per class.

Build in lots of structured pause time for students to reflect on big questions. Many students will feel more confident raising their hands to volunteer to speak after they have had time to process. Name that there are no specific right answers to these big questions.

Define “access” early in the Chef Meeting so that vocabulary is not a barrier to participation. Access is being able to get something.

Help students brainstorm access and barriers to access by asking them, “What have you wanted to cook from the ESY kitchen and not been able to?” This helps to ground the discussion in their experience.

The discussions in the Chef Meeting can surface differences in students’ financial relationships to food. Balance hands-off and more involved facilitation to name and explain when students make statements that are offensive or short-sighted—be ready to disrupt oppressive assumptions and statements.

We introduce the terms “food desert” and “food swamp” in this lesson and acknowledge that both terms are controversial because they can cast low-income communities in a negative light.

Beans: The chili is especially delicious when prepared with a variety of beans. We used black, pinto, and kidney. If cooking beans from scratch, cook in different pots to accommodate for their different cooking rates.

Crispy cornbread crust: Heat the skillet before adding the cornbread batter to the skillet to have a crispy crust.

The cornbread recipe involves using the stove to melt the butter and heat the skillet. Many students were confused and thought that the cornbread would finish cooking on the stove as well. Share that when a recipe says to “bake” that means putting it in the oven.

Encourage the students to just barely mix the cornbread ingredients. Share that over-mixing creates a tough cornbread while just mixing a little bit will result in a tender texture. Explain that it is fine to have a rough-looking batter.

If students leave a lot of dough in the bowl after transferring to the skillet, introduce the rubber spatula as a great tool for getting every last bit.

Different kinds of cornbread: Students will be accustomed to a variety of cornbreads. This can be a fun conversation to have. Ask them to talk about the cornbread they are used to and name the differences in sweetness, consistency, amount of corn vs. wheat flour, and the color and grind of corn.

Serving with butter and honey: If you don't wish to serve the cornbread with butter and honey, you can spread some over the top so that every piece has a little bit.

Show students how to use a utensil as a cake tester to test if the cornbread is cooked all the way through. If it comes out covered in dough, then it is not finished.

Encourage the team working on the cornbread to split into dry and wet ingredient groups to organize and expedite their process.

Advise the students working on the wet ingredients to consider what would happen if they were to mix the hot melted butter with the eggs directly. Encourage them to mix the hot butter with the buttermilk first or to let the butter cool before mixing it in.

Call attention to the fact that after cooking the dry spices in the pot, some will stick and begin to burn unless you quickly add in some liquid. Share that browning is good but burning will leave an acrid taste. The recipe uses the canned tomatoes as that liquid which quickly releases the spices and cools down the pan. Name this as similar to deglazing.

Highlight that cooking the spices in oil before adding the tomatoes is similar to making the coleslaw dressing on Monday and builds the flavor of the spices.

We found that a combination of chile powder gave us the best flavor. We used equal parts of ancho and New Mexico chile powders.

Many students are skeptical that a vegetarian chili can be delicious but love it once they try it.

Soak bulgur in hot water before adding it to the chili to speed up the cooking time. The bulgur adds the familiar texture of ground beef to the chili. It also adds protein and makes the chili more filling.

Groups can choose the consistency of their chili by adding bean or tomato liquid or not. Note that it is easy to add more liquid and thin it out but hard to make it thicker.

Encourage the whole group to work together on the final seasoning so that everyone will be happy with the level of salt when it is served.

Vocabulary

- ▶ Access
- ▶ Consumer
- ▶ Consumer responsibility
- ▶ Food justice

☑ Connections to Standards

- SL.8.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- SL.8.1.b.** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.8.4** Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
- RST 6-8.3.** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

EDIBLE SCHOOLYARD KITCHEN STANDARDS, GRADE 8

- 2.1.1.** Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently.
 - 2.1.2.** Select measuring tools from the ESY Toolbox to measure precisely and convert measurements.
 - 2.3.8.** Approach lessons with **intention** by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.
 - 2.3.9.** Collaborate to identify, choose, and complete jobs to execute recipes, and explain each individual contribution to the end result.
-

Contributors

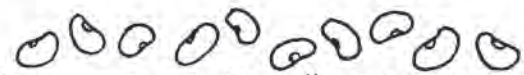
All lessons at the Edible Schoolyard Berkeley are a collaboration between the teachers and staff of the Edible Schoolyard and Martin Luther King Jr. Middle School.

Vegetarian Chili

- 4 cups cooked assorted beans
- 3 tablespoons vegetable oil
- 1 medium onion, finely chopped
- 2 carrots, peeled and finely diced
- 1 bell pepper, diced
- 5 cloves garlic, minced
- 3 tablespoons chili powder
- 1 tablespoon cumin
- 1/2 cup bulgar
- 1 teaspoon oregano
- 1 28oz can chopped tomatoes
- 1 teaspoon tomatoe paste, dissolved in 3/4 cup warm water
- 2 teaspoons salt, plus more to taste

OPTIONAL TOPPINGS:
chopped cilantro, jalapeños, green onion, sliced radish, grated cheese, sour cream, lime wedges.

HINTS:
For 4 cups cooked beans, start with 2 cups dried, or use 3 15-ounce cans
Use poblano or anaheim peppers in place of bell pepper for a fresh, spicy taste.



- ① In a heavy-bottomed pot, heat 3 tablespoons of olive oil over medium heat. Add onion and sauté until soft. Stir in garlic, and sauté until fragrant, another 30 seconds - 1 minute. Add the carrots and the bell pepper, and cook until tender.
- ② Add the spices and cook until they are fragrant and spices are starting to stick to the bottom of the pan.
- ③ Add the bulgur, oregano, tomatoes, and 2 teaspoons salt. Bring to simmer and cook until carrots are soft. Stir in the tomato paste dissolved in water, and beans. Bring back to simmer and continue to cook for 5-10 more minutes.
- ④ Taste, and add salt if needed.
- ⑤ Stir in the cilantro to serve, or use as garnish. Also garnish with lime, jalapeños, grated cheese, green onions, sour cream, and sliced radish.

Cornbread

INGREDIENTS

- | | |
|---------------------------|--|
| 1 cup all-purpose flour | 1 cup buttermilk* |
| 3/4 cup yellow cornmeal | 1/4 cup melted butter, cooled until tepid
plus 1/2 tablespoon to grease pan |
| 2 teaspoons baking powder | 1 large egg |
| 1/2 teaspoon baking soda | 2 tablespoons honey |
| 3/4 teaspoon salt | |

DIRECTIONS

1. Preheat oven to 400°F.
2. In a cast iron skillet, melt all the butter over medium heat on the stove. Once melted, remove from heat and allow to cool.
3. In a medium bowl, mix together the flour, cornmeal, baking powder, baking soda, and salt, until there are no lumps.
4. In a separate bowl, mix together the buttermilk, melted butter, egg and honey.
5. Make a well in the center of the dry ingredients, then mix in the wet ingredients. Stir just until dry ingredients are moistened - don't overmix.
6. Spread remaining melted butter around the skillet and pour in batter.
7. Bake the cornbread until the center feels just about set; 10-12 minutes in a cast iron skillet, 15-18 in a baking pan.

* If you don't have buttermilk, you can make your own by mixing together 1 cup of milk and 1 tablespoon of lemon juice or vinegar. Allow mixture to sit 10 minutes, then use.

1. What was a main takeaway for you this week?
2. What is something you learned this week that surprised you?
3. What is a question you still have about something you learned this week?
4. What is something you learned this week that made a personal impact on you?

1. What was a main takeaway for you this week?
2. What is something you learned this week that surprised you?
3. What is a question you still have about something you learned this week?
4. What is something you learned this week that made a personal impact on you?

1. What was a main takeaway for you this week?
2. What is something you learned this week that surprised you?
3. What is a question you still have about something you learned this week?
4. What is something you learned this week that made a personal impact on you?

Pizza Celebration

In this final eighth-grader lesson, students celebrate their completion of the program by making wood-fired pizza and lemonade in the ESY garden.

Objectives

After this lesson, students will be able to:

- ▶ Make lemonade, pizza sauce, and pizza dough from scratch.
- ▶ Form dough and build a pizza with sauce, cheese, and toppings.
- ▶ Discuss their experiences of baking pizza in a wood-fired oven and eating it in the ESY garden with their teachers and classmates.

Assessments

During this lesson, students will:

- ▶ Make pizza sauce, pizza dough, lemonade, and prep pizza toppings.
- ▶ Form their dough and build a pizza with sauce, cheese, and toppings.
- ▶ Watch their pizza bake in the wood-fired oven and eat it in the ESY garden with their teachers and classmates.

Materials

- Pizza Sauce recipe
- Pizza Dough recipe
- Lemonade recipe

FOR THE WOOD-FIRED OVEN

- Oven peels
- Wire brush
- 2 damp towels

FOR THE HANDWASHING STATION

- Bucket of warm soapy water
- Bucket of warm rinsing water
- 2 towels

FOR THE PIZZA BUILDING STATION

- 2 tables
- 2 rags
- 2 tablecloths
- 6 wooden pizza peels
- 2 flour bowls
- toppings

FOR THE PIZZA BUILDING STATION SIDE TABLE

- Table cloth
- Cleaning rag
- Really big butcher block
- Pizza cutter
- Trays

FOR THE EATING STATION

- Cups
- Napkins
- Dirty dishes basin
- Compost basin

FOR THE GRAIN GRINDING STATION

- Grain grinding bike
- 3 mortars and pestles
- 3 mixing bowls
- Wheat berries
- Canvas bags for threshing
- Whole, dried wheat bushels for threshing
- Wooden winnowing bowls

INGREDIENTS FOR THE PIZZA DOUGH

- Pizza flour
- Wheat flour
- Yeast
- Salt
- Sugar
- Olive oil

INGREDIENTS FOR THE TOPPINGS

- An assortment of herbs, green garlic, and spring onions
- Chard, kale, and spinach
- Olives
- Olive oil
- Fresh garden ingredients

INGREDIENTS FOR THE PIZZA BUILDING STATION

- Pizza sauce
- Grated cheese
- Toppings

INGREDIENTS FOR THE LEMONADE

- Lemons
- Sugar or honey
- Water

TOOLS FOR THE DOUGH STATION

- 1 large metal mixing bowl
- 1 plastic 4-cup measuring cup
- 2 sets measuring spoons
- 1 plastic measuring beaker
- 3 bench scrapers
- 1 metal one cup measure
- 1 small metal whisk
- 2-3 half sheet pans
- Plastic wrap
- 1 plastic dough scraper
- 1 wooden spoon

TOOLS FOR THE TOPPINGS STATION

- Chef's knives
- Cast-iron skillet
- Cutting boards
- Strainers

EQUIPMENT

- Wood-fired Oven or Oven

BEFORE YOU BEGIN

- Collect all materials and build a fire in the wood-fired oven (it takes about 90 minutes to fully warm the ESY oven).
- Make the Pizza Sauce.
- Make Pizza Dough for the first class.
- Collect all materials and set up the Pizza Building Station and Pizza Building Station Side Table.
- Collect all materials and set up the Eating Station.
- Collect all materials and set up the Dough Station.
- Collect all materials and set up the Grain Grinding Station.
- Collect all materials and set up the Lemonade Station.
- Collect all materials and set up the Toppings Station.

Procedures

1 AT THE OPENING CIRCLE

1. Use the word “celebrate” in a sentence: “We are excited to celebrate the culmination of your three years in the Edible Schoolyard Program today!”
2. Welcome students and explain that today they will work together to celebrate their last day in the Edible Schoolyard with pizza and lemonade.
3. Explain that today’s four working groups are all devoted to tasks to prepare for eating pizza, and that working groups will rotate through the Pizza Building Station where, in teams of two, students will have the opportunity to form their pizza dough and build it with sauce, cheese and toppings.
4. Go over today’s jobs and divide students into four working groups, one group for each job. Today’s jobs are:

Dough: Students “pay it forward” by making dough in the kitchen classroom for later classes.

Grain grinding: Students use a variety of methods to grind wheat to use in the pizza dough.

Lemonade: Students make lemonade at the outdoor kitchen and keep the Eating Station supplied with it.

Toppings: Students harvest crops from the garden, wash them, and prep them for use at the Pizza Building Station.

2 IN THE FIELD

Pizza Work Rotation: Each group rotates through the Pizza Building Station as the other groups work in the kitchen classroom, outdoor kitchen and garden.

1. The Dough group starts at the Pizza Building Station, where in groups of two they will assemble a pizza.
2. When the first group finishes baking their pizzas, they may sit down at the Eating Station to eat.
3. When the bell rings, the next group proceeds to the Hand Washing Station and then to the Pizza Building Station.
4. It will take a total of 80 minutes to rotate all groups through the Pizza Building Station and Pizza Eating Station.
5. After each group’s Pizza Work Rotation is complete, students may relax in the garden or visit the chickens.

3 AT THE PIZZA BUILDING STATION

Make and Eat Pizza

1. Demonstrate how to pull the dough on a pizza peel and add toppings, making sure to emphasize using enough flour to ensure adequate “scotch” (the dough’s ability to

move independent of the peel, so that it will slide off into the oven).

2. Give a ball of dough to each team of two students and have them assemble their pizza.
3. Bake each pizza in the wood-fired oven.
4. When pizzas are done, students proceed to the Eating Station, eat their pizza, and drink lemonade.

4 AT THE CLOSING CIRCLE

1. Thank students for helping make the pizza celebration a success.
2. Ask students to participate in one final Whip Around and share their favorite experience in the garden over their three years at King Middle School.

☑ Connections to Academic Standards

COMMON CORE STATE STANDARDS, ENGLISH LANGUAGE ARTS AND LITERACY, GRADE 8

- SL.8.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- SL.8.1.b** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- SL.8.1.b** Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
- SL.8.1.c** Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.
- SL.8.4** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
- SL.8.6** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 8 Language standards 1 and 3 on page 53 for specific expectations.)
- L.8.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- L.8.1.d** Recognize and correct inappropriate shifts in verb voice and mood.
- L.8.3** Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- L.8.6** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

- RH.6-8.4** Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies. RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
- RST.6-8.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- RST.6-8.7** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

HEALTH EDUCATION CONTENT STANDARDS FOR CALIFORNIA PUBLIC SCHOOLS, GRADES 7&8

- 1.4.N** Describe how to keep food safe through proper food purchasing, preparation, and storage practices.
- 1.8.N** Identify ways to prepare food that are consistent with current research-based guidelines for a nutritionally balanced diet.
- 4.1.N** Demonstrate the ability to use effective skills to model healthy decision making and prevent overconsumption of foods and beverages.
- 7.1.N** Make healthy food choices in a variety of settings.
- 7.2.N** Explain proper food handling safety when preparing meals and snacks.

CONNECTIONS TO EDIBLE SCHOOLYARD STANDARDS

Edible Schoolyard 3.0

In the Edible Schoolyard Program

- 1.0** Students work with each other and teachers to develop community and personal stewardship, along with skills that will help them navigate different situations throughout their lives.
- 1.1.1 – 1.3.12** This lesson fulfills all Edible Schoolyard Program standards, numbers 1.1.1 through 1.3.12. See The Edible Schoolyard Berkeley Standards for details.

IN THE KITCHEN CLASSROOM, 8TH GRADE

- Tools 2.1.1** Choose the right tool for each job at the ESY Cooking Station, anticipate steps of the recipe, and take initiative to cook independently.
- Tools 2.1.2** Select measuring tools from the ESY Toolbox to measure precisely and convert measurements.
- Tools 2.1.3** Demonstrate mastery of knife skills, safety and care using knives from the ESY Toolbox.
- Concepts 2.3.8** Approach lessons with intention by thinking through how the recipe relates to the kitchen, garden, and wider environment as a whole.
- Concepts 2.3.9** Collaborate to identify, choose, and complete jobs to execute recipes, and explain each individual contribution to the end result.

Contributors

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

Resources

- Pizza_Sauce_Recipe.pdf
- Pizza_Dough_Recipe.pdf
- Lemonade_Recipe.pdf

TOMATO SAUCE FOR 8TH GRADE PIZZA EXTRAVAGANZA!

- 6 ONIONS - PEELED + DICED
- 6 CARROTS - PEELED + DICED OR SHREDDED
- 6 CELERY RIBS - DICED
- 2 CUPS OLIVE OIL
- 8 BAY LEAVES
- 2⁺ TEASPOONS RED PEPPER FLAKES
- 6 CANS TOMATO PASTE
- 24 LARGE (28 OZ.) CANS TOMATO PUREE'
(SAN MARZANO TOMATOES ARE BEST)

THIS WORKS BEST DIVIDED IN TWO LARGE STOCK POTS.

SAUTE' THE ONIONS, CARROTS, CELERY, BAY LEAVES
AND RED PEPPER FLAKES IN HEATED OLIVE OIL.

WHEN SOFT ADD THE TOMATO PASTE AND COOK TILL
IT JUST BEGINS TO BROWN. ADD THE TOMATO
PUREE' AND SIMMER OVER LOW HEAT FOR 1-2
HOURS.

PIZZA DOUGH

1 1/2 CUPS WARM WATER

2 PACKETS YEAST (2 TABLESPOONS)

1/4 CUP OLIVE OIL

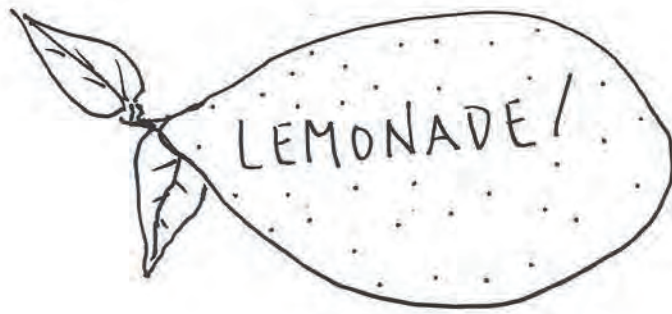
2 TABLESPOONS SUGAR

2 TEASPOONS SALT

4 CUPS FLOUR

1) POUR 1 1/2 CUPS WARM WATER INTO A LARGE BOWL, SPRINKLE WITH THE YEAST AND LET STAND TILL FOAMY, ABOUT 5 MINUTES.

2) WHISK OIL, SUGAR AND SALT INTO THE YEAST MIXTURE. ADD THE FLOUR AND STIR UNTIL A STICKY DOUGH FORMS. TRANSFER DOUGH TO AN OILED BOWL AND BRUSH THE TOP WITH OIL. COVER BOWL WITH PLASTIC WRAP AND SET ASIDE IN A WARM PLACE TILL DOUGH DOUBLES IN SIZE - ABOUT 1/2 HOUR. TURN DOUGH OUT ON A LIGHTLY FLOURED SURFACE AND GENTLY KNEAD 1 OR 2 TIMES BEFORE USING. MAKES 2 8 OUNCE PORTIONS.



6 CUPS WATER

1/2 CUP SUGAR OR HONEY

ZEST OF 2 LEMONS

JUICE OF 6 LEMONS

2 CUPS ICE CUBES

FRESH MINT FOR GARNISH

POUR WATER INTO A LARGE PITCHER, ADD THE SUGAR OR HONEY AND STIR TILL IT DISSOLVES. ADD LEMON ZEST, LEMON JUICE AND THE ICE CUBES AND MIX WELL. GARNISH WITH FRESH MINT.

OPTION: ADD A DROP OF VANILLA EXTRACT FOR A DEEPER FLAVOR.