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Cook to Learn:

A Food-Focused Curriculum for Grades 3-5

By

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Literacy and
Childhood Education

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Abstract

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Cook to Learn: A Food-Focused Curriculum for Grades 3-5

In this Integrated Master's Project, I argue that a new curriculum is needed to address the following: (a) plant-based foods and from-scratch food preparation practices are strongly connected to positive outcomes for children, (b) diets high in processed foods can lead to negative health outcomes (c) students aged 8-10 are particularly well suited to learn more about food, (d) studying food offers many opportunities for interdisciplinary learning across many subjects (literacy, math, science and social studies) and (d) food-focused learning connects particularly well to common learning objectives for students in grades 3-5, yet (e) there is currently a dearth of appropriate curricular materials to meet the needs of today's student population. As a career-changer with some domain experience in both food and education, I have created a curriculum designed to address these areas of need. Having tested this curriculum with a group of eight children in this age range, I share my findings, reflections and changes made to the curriculum based on their feedback. I discuss the future implications for this work—and the implications for our students' futures if we do not continue to take up this work and improve upon it.

Keywords: food, education, public health, equity, nutrition, interdisciplinary education, elementary education, curriculum design

Acknowledgements

I am grateful to my former students, eight children aged 8-10, who helped me to teach and test this curriculum in the fall of 2016. I am also thankful for my patient and encouraging co-teacher, Jacob Samuels, and to the director of our after-school program, Amanda Schatz, for their role in providing their feedback for my ideas. I similarly encourage anyone using this curriculum to allow this collaboration between educators and children to drive the use and adaptation of the activities I have shared.

I had the privilege of visiting America's Test Kitchen in the summer of 2016 while planning this unit. I am grateful to the friends who hosted me there. This experience helped me to envision the type of inquiry-based, fun-filled, "real world" learning environment I wished to create for my students.

As I thought about how to build community, I further benefited from the innovations of other educators in my Progressive NYC community, through mentorships and professional development. I am thankful to the team of educators with whom I co-taught third grade from 2014-2015, particularly my co-teacher Cara Regan. Their approach to education--prioritizing hands-on, student-driven activities--helped me to see what was possible in a baked-from-scratch curriculum.

As I moved into teaching the recipes and content in this unit, I leaned heavily on the work of educators who had gone before. I have mentioned in many places the capacity-building work The Edible Schoolyard is doing in New York City to support food-focused learning; credit is due to Liza Engelburg, their director of education, for being the driving force behind these efforts, and for their squadron of kitchen and garden educators, who are eager to share their ideas.

I am grateful to my friends and family for their support as I engaged in this labor of love. This work would not be possible without my grandparents, who fed me when I was hungry; to my parents, who taught me to hold the work of cooks and gardeners in high regard, including my own; to my friends, particularly those who were kind enough to share their own expertise as cooks and teachers with me; and my dog, who cheerfully cleans up my mess. And above all, my incredible husband, Rich, for his role in supporting and believing in my work (and never once complaining about the dishes). This work is dedicated to him.

Finally, I owe an enormous amount of debt to Mollie Welsh Kruger, my thesis advisor, who patiently shepherded my written work along as an experienced elementary school educator with decades of experience. As children well know, it can make a world of difference to have a teacher who can guide your work while allowing you to retain ownership over your decisions, especially those that are guided themselves by your own values and identity. She is a role model for me in both her respect and her restraint. May we all approach our future adventures in food and education with equal heaping measures of both.

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Cook to Learn: A Food-Focused Curriculum for Grades 3-5

This Integrated Masters Project, submitted to the Bank Street Graduate School of Education in the spring of 2017, is an original, interdisciplinary curriculum for children in grades 3-5, using food as a focus. This curriculum is appropriate for use in a variety of formats. These may include: a multi-week unit of study inside the classroom, particularly as a way to kick off a school year and get to know one's students; a stand-alone after-school class that meets weekly, as mine did; a youth program hosted within a community center, culinary school, camp, garden, or farm; or within a private home setting, with one's own children. (For notes on the best ways to implement this curriculum in your specific setting, please see Applications.)

I created this curriculum for several reasons.

First, because food is a personal passion of mine and an area with which I have some expertise. I came to teaching after a first career in journalism—a career during which I focused on food, travel and the environment.

Secondly, because my personal experiences with food and diet-related disease have led me to become acutely aware of how poverty and lack of food knowledge intersect to circumscribe some students' lives and not others. I believe that as educators, we have an ethical and political duty to remedy this situation through our teaching.

Thirdly, because I believe that the collective expertise we have developed as a species, as well as the social, psychological, philosophical and spiritual connections we carry forward in our communities through food, may be lost to us if we do not take steps to preserve them, and by extension to preserve what it means to be truly human.

Finally (getting down to brass tacks), I created this curriculum because I observed that an up-to-date resource of this kind was not currently available to me as a classroom teacher and after-school instructor. Particularly, I wanted one that was well-aligned with the teaching philosophies of Bank Street (which call for learning experiences to be hands-on, meaningful and developmentally appropriate for a diverse range of learners). I also wanted one that was simultaneously well-aligned with current educational standards (which call for students to be college- and career-ready), so that educators may justify this curriculum's use as a supplement to or substitute for existing academic curriculum.

This curriculum represents the culmination of my studies at Bank Street and within the New York City school system, which has immersed me in the theory and methods that I used to create this work. Encoded in the DNA of this new project are the genes of many time-tested ideas and philosophies, developed by educators and scientists hailing from many parts of the world, as well as the food production methods developed by everyday cooks over millennia.

With this curriculum, I attempted to combine many best practices from literacy, math, science and social studies curricula, with regard to both their structure and their methodologies. It leads students through three distinct stages of growth:

1. The creation of a community, including the development of key norms related to food safety and mutual respect for individual food traditions.
2. The experience of being immersed in a diverse array of foods, food-focused writing (both fiction and nonfiction), and food-based experiences with key community members and places
3. The opportunity to engage in an inquiry-based, in-depth exploration of key foundational recipes, culminating in a family dinner and celebration.

My hope is that this curriculum will remain a living and flexible framework for myself and others to use as we continue to confront the educational challenges posed to us in the 21st century. In particular, I hope to continue to develop food-focused learning activities and materials that equip our students to cook and grow food; to develop their abilities and identities as scientists, mathematicians, writers, historians and artists; and to connect and contribute to their communities via the universal language of food.

I cannot imagine a more rewarding outcome from this work than to hear that it has been shared and found useful. If you wish to use this curriculum and to adapt it, I hope you will similarly share your results and your ideas with me. I can be reached at rweaver@bankstreet.edu.

Rationale

Teaching is political work because power and privilege are deeply embedded in everything having to do with teaching. Teaching is not simply about reading, or math, or art. Instead, it is also about who is heard, listened to, and read, who gets to count, and who can paint the picture. It's about who moves ahead and who gets

left behind. In this sense, teaching is political work, and it has always been so. Perhaps it is time for teacher educators, policymakers, and the public at large to recognize this fact and use the political nature of education to help turn things around for our most vulnerable students. (Nieto, 2006, p. 9)

It is said that all politics is personal. For many Bank Street educators, Sonia Nieto's claim that teaching is inherently political is seen as an important corollary to our work. Thus, when it comes to food, a symbol of inequity of opportunity and of outcomes in America, my reasons for addressing this topic via a new curriculum are both personal and political.

The Personal: My Sociocultural Context

I was raised by two busy and underpaid social workers in rural Utah. With what little resources they had, they provided me with many opportunities to appreciate the vast wilderness that lay at our doorstep. We often spent summers camping in and around the national parks. I also got to know the more ordered outdoor worlds created and tended by humans: a family friend raised pigs and grew alfalfa, and we grew tomatoes, pears and watermelon in our own backyard. These experiences provided me with a hands-on way of understanding the vast ecosystem and food chain of which I was a small part, and to occupy an environmentally conscious place within it.

My parents also gave me many opportunities to appreciate and respect the food traditions of others. My mother was from Buffalo, and though she comes from a family of White, Austrian immigrants, she carries a lifelong torch for her hometown's Italian cannoli. My father was born and raised in the predominantly White suburbs north of Salt Lake City, where he still lives, but he has an insatiable appetite for trying new cuisines

while traveling. He passed on this love to his children, who were raised to use the chopsticks in every Asian restaurant.

At the same time, our family's limited resources transcribed our opportunities to eat and create home-cooked food on a regular basis, or to have a suite of recipes that represented our own culinary heritage. My parents felt they did not have the expertise, time or money to waste on preparing new foods, particularly ones they suspected their children wouldn't eat, and I was a picky eater. I eschewed most new or "healthy" foods until I was fifteen, when I finally broke down on a long cross-country flight and accepted a wilting airplane salad in desperation. Though I enjoyed broccoli, and would consent to ordering cashew chicken at the aforementioned Asian restaurants, I generally preferred a diet of grilled cheese sandwiches, served with a side of Cheetos. Breakfast and afternoon snacks were often self-catered microwave affairs; Marie Callender, not my mother, put dinner on the table most nights.

My real culinary education took place outside my home *and* the K-12 school environment, when a summer job gave me the chance to learn to cook for myself as a teen. My first gig: washing dishes and prepping salads in a sweltering catering kitchen run by a one-eyed Polish matron named Claudette outside of Buffalo, where we moved when I was fifteen. There, I discovered the joys of smelling a freshly-sliced cucumber, the knife skills necessary for churning out sixty deviled eggs and twenty pounds of potato salad in one three-hour shift, and the perseverance to make a wedding's worth of dirty dishes disappear. When I took these skills home, offering to help my family members with holiday meals and to feed my younger brother when other adults were busy, I was hailed as a conquering hero. My measly salary of five dollars an hour (pre-tax) also

granted me the sense of independence every teen craves, the belief that I was capable of hard and careful work, and the ability to pay my own way through college with future food-industry jobs. This foundation eventually launched me into the comfortable middle class, where I finally learned to eat healthy and varied foods, to cook them for others, and finally, to write and teach about cooking for a living.

I often joke that my long hours of self-catered childhood solitude and teenage dishwashing constitute “the poor man’s Progressive private school,” and I am grateful for the independence, creativity and sense of identity they conferred. But our family’s early reliance on processed foods came at a very high price, one it would be better for other families and children to avoid. Since the late 20th century, when my parents and I primarily relied on Stouffer’s and Frito-Lay to feed us, the American Cancer Society has released guidelines on nutrition that link the refining of grains and the processing of meat (i.e. “lunch meats, hams, hot dogs and other processed meats”) to increased cancer risk (Cancer.org, 2016). These guidelines may provide a partial explanation for why four close family members of mine have been diagnosed with cancer in the last decade, two of them with colorectal cancer. This includes my mother, who had her large intestine removed to prevent the spread of colon cancer in 2004, and my younger brother, David, who died of brain cancer at age 26, shortly after completing college. His wish to help children himself as an educator was never realized.

This trajectory has led to what I would term a fairly strong bias regarding the perils of processed foods, and a strong motivator for me to provide a different childhood eating experience for future generations. If one of the aims of educators is to produce happy and healthy adults, then we must truly think about the “whole child,” and the

whole adult that this child will become. How can we in good conscience raise skilled adult workers if we know their long hours will prevent them from truly taking care of their bodies, and the bodies of their children? What good is developing a beautiful mind inside a body afflicted with disease, one that will never see its full potential realized? Why work so hard to plant a seed, if it lives within an environment in which it may die before its time? These personal questions have served as key motivators for me in my work with food and education.

The Political: Our Students' Sociocultural Context (And Our Own)

My story is a common one among children today, a story in which both parents work long hours, and the beeping microwave has replaced the literal and figurative hearth. It's a story that speaks to a widespread reality of unequal economic opportunity, poor policymaking and corporate greed. What it is *not* is a story about some unique failure of character on the part of our parents, or our students' parents. Nowadays, there are larger forces at play.

Corporations versus communities. The larger political story of our dangerous modern diets can be said to begin in the early 20th century. Though much has been made of the relationship between women entering the workforce in larger numbers, and the subsequent decline of home cooking in the later half of the century, corporations have in fact endeavored to take over the American kitchen since WWII left the food industry with a surplus of army-style rations to unload on the American public (Shapiro, 2004, as cited in Pollan, 2009).

As Americans developed a taste for canned and frozen food served in prefabricated containers, a marketing industry rose up around these habits to further

encourage them, creating messaging that helped to convince the American housewife that opening a can or using a just-add-water mix still constituted “real” cooking for her family (Shapiro, 2004, as cited in Pollan, 2009).

Thus began the takeover of the American kitchen, hastened when the microwave made it possible to not only open and prepare a processed food, but cook it in the container in which it came:

Over the years, the food scientists have gotten better and better at simulating real food, keeping it looking attractive and seemingly fresh, and the rapid acceptance of microwave ovens — which went from being in only 8 percent of American households in 1978 to 90 percent today — opened up vast new horizons of home-meal replacement. (Pollan 2009)

Even food created by the human body was subject to supplanting by corporations: the marketing of baby formula to physicians, as a “safe” alternative to breastmilk, began in the late 1920s. The result? “By the 1940s and 1950s, physicians and consumers regarded the use of formula as a well known, popular, and safe substitute for breastmilk. Consequently, breastfeeding experienced a steady decline until the 1970s” (Fomon, 2001, as cited in Stevens, Patrick & Pickler, 2009).

Unfortunately, this powdered product, frequently marketed as a nutritious and safe alternative to breastmilk, has been linked to our country’s rise in childhood obesity and diabetes rates (Stevens, Patrick & Pickler, 2009). Research shows that children fed the breastmilk of mothers eating a varied diet tend to develop more willingness to try a variety of foods, while formulas, particularly those flavored with vanillin, set the stage in children for a lifelong craving of simplified sweet and fatty flavors (Wilson, 2015).

Thus, for many Millennials such as myself (I was born in 1985), food manufacturers and marketers have intervened in our diets since the earliest days of our lives. I was fed on formula myself: My own mother had to return to work after only eight weeks of nursing at home, and breast pumps were not available then. It is perhaps no coincidence that I became a “picky eater” as a child, one who preferred bland and cheesy foods—preferences that Wilson finds are shared by many Millennial and Generation X consumers fed on formula. Beginning a life with processed foods seems to engender a preference for those same foods later on in life. Parents, try as they might to convert their “picky eaters” to the way of the kale salad, often feel powerless to supplant these early preferences, and blame themselves (or are blamed by others)—never dreaming it may have been their own limited diets or breastfeeding options, both constrained by corporations’ outsize influence on the American foodscape and work schedule, that created the conditions for this “picky eating” in the first place (Wilson 2015).

Breastfeeding did not experience a resurgence in American culture until the early 90s, when a confluence of factors conspired to make it more appealing and feasible. In 1990, the American Academy of Pediatrics (AAP) officially reversed course, voicing opposition to marketing formulas to the general public, which companies had begun to do in 1988 (Stevens, Patrick & Pickler, 2009). “The AAP believed the advertisements created a negative effect on breastfeeding, interfered with physicians’ advice on infant nutrition, led to confusion among consumers, and increased the cost of infant formula” (Greer & Apple, 1991). A concurrent surge in research and policy supporting breastfeeding, and the rise of the breast pump, made feeding babies with breastmilk more possible and appealing to mothers (O’Connor, 1998). And the Family Medical Leave Act

of 1993 allowed some mothers (not all) an opportunity to stay home for longer periods with their children, leading to healthier infant outcomes (Rossin, 2011).

However, it wasn't until 2013 that researchers at Brigham Young University found conclusive ties between formula feeding and childhood obesity, adding more fuel to the breast milk-vs.-formula fire and bolstering the "health of the child" argument for breastfeeding champions (Gibbs & Forste, 2013). And the link between formula-feeding and "picky eating" (Wilson 2015) is still not common knowledge.

Political forces vs. personal choices. Meanwhile, given the intransigent paucity of policies allowing working mothers to spend *paid* time with children during their earliest months of development, breastfeeding for upwards of six months in order to train a child's palate for future sushi dinners remains a luxury that many working-class mothers—and thus, their children—still cannot afford. As Rossin (2011) has found:

[The Family Medical Leave Act] may have increased disparities in early childhood health between children from different socio-economic backgrounds, [as] children of poor, single and low-educated working mothers are a key vulnerable population that was not reached by the FMLA. These children and their families may benefit the most from policies that enable their mothers to take time off work during their early life without substantial losses in income. These mothers are often forced to work immediately after childbirth, and their newborn children are then placed in low-quality childcare. Their children already stand at a disadvantage for their later-life opportunities as they are born into low socio-economic status families, and lack of maternal time during their first few months of life may exacerbate this disadvantage. Thus, if policymakers are concerned

with decreasing disparities in child health and well-being between children of different backgrounds, they need to consider the fact that an unpaid maternity leave policy may actually increase disparities because it only benefits those mothers who can afford to take it. (Rossin, 2011)

Low-income families cannot afford to make up this difference later on, when children are able to feed themselves. Though researchers have found that children require eight to 15 exposures to a new food to overcome their initial trepidation—but poor parents cannot afford to spend the time or money on pushing food their children won't eat (Daniel, 2016). While all Americans work more, making lack of time a key culprit in the loss of home cooking, poorer Americans are more likely to work multiple jobs and to lack convenient access to preferred foods, making it harder to simply reach for the right ingredients during their precious few hours at home (Applehans, Warin, Schneider & Pagoto, 2014). Hence, poor children often eat less varied and nutritious diets than their wealthier counterparts—not because of lack of love or knowledge, but lack of time and money. Thus, approaches to nutrition education that betray a deficit mindset towards low-income parents, often purporting to offer them information as the sole solution to their children's nutrition problems (versus the true culprits as revealed by research), simply add insult to injury (see also: Meek & Tarlau, 2015).

Nor are all children (or parents) easily able to acquire the skills necessary to prepare appealing, healthy, economical foods from scratch that might suit their limited time and budgets, even if they have the “right” information and means. During previous eras, home economics classes may have provided a last chance to learn the basics of food preparation, creating more equity among learners (while arguably underscoring the

inequities between genders, given home economics' associations with women's unpaid domestic work). Nowadays, funding and interest in these classes for middle- and high schoolers has waned, resulting in less widespread formal instruction in cooking at school, while informal instruction from parents declines at home (Pollan, 2009; Applehans, Warin, Schneider & Pagoto, 2014).

Eating healthy is getting harder. While corporations have severed our ties to our culinary past, making it less likely for us to choose varied and healthy foods in the present, our school systems and government are complicit in maintaining the disempowering circumstances corporations have created, by cutting traditional food-focused programming without replacing it with a viable 21st-century alternative.

This sociocultural context is set to create tragic consequences for students across the income spectrum, and the data suggest it will have the most dire consequences for our most vulnerable students. Children and adults who rely on processed and other pre-prepared foods are more vulnerable to obesity and diabetes, to diseases of the heart and digestive system, and to certain cancers (Harvard Obesity Prevention Source, 2005). Each year, 2.6 million people die as a result of being overweight or obese; 4.4 million due to raised total cholesterol levels; and 7.1 million due to raised blood pressure (World Health Organization, 2012). As many educators are aware from their experiences in school, children who do not receive adequate nutrition at home already suffer in school (Bell 2013), but these implications for their lives outside of and beyond school are equally chilling and problematic.

Beyond the body: a loss of identity. The quantitative data cited above has left me convinced that all children deserve a chance to learn to eat and cook good food in

school, even if they do not win what Seth Godin (2012) terms “the parental lottery.” As with so many essential skills we teach, from the ability to read and calculate to the ability to wonder at science and steep ourselves in history, our lives quite literally depend on us (re)learning to cook. This objective, scientific data on diet and disease should be enough to spur us to action.

At the same time, it is not effective to focus solely on nutritional science as the *content* of a food education curriculum, even if it provides us with the *rationale*. As Wilson (2014) has found, the most successful and strategic food education programs highlight both “push” factors (the threats one wishes to avoid) and “pull factors” (the pleasure and joy that comes with making a change). Food has emotional, cultural, philosophical and spiritual components that need to be addressed in our curricula, as urgently if not more so than the science.

Teachers, parents and students need to understand, on a personal level, that when we talk about cooking, we are not just talking about health, but *identity*. As Keeling & Pollard (1999) show, food defines who we are as individuals as well as who we are in relationship to our families and communities, particularly during our formative years of childhood. The social codes embedded in shared eating experiences convey what Dewey (1916) refers to as our “social form”—something that cannot be passed on through “direct contagion or literal inculcation,” but requires that “the particular medium in which an individual exists leads him to see and feel one thing rather than another” (p. 15). Without our own considered environment or set of plans, a “particular medium” for ensuring we pass down our food knowledge, we may lose the grandmother’s recipe for latke, collard greens, or dumplings forever—and with it, a sense of cultural memory. We may lose the

expertise to forage for lychees and mushrooms, cultivate perennial chives year after year, grow cabbage without modern pesticide, dry red chiles in the sun—and with these skills, a cultural sense of place, as well as a caring connection to the earth. We must understand, and lead others to understand, that these ingredients and techniques do not just give us physical sustenance. They give us pride and memory, a home in the world.

As educators steeped in child development theory, we cannot forget that our mouths are also a child's first point of contact with the world, and remain an important psychological link to their mothers, their families and our environment, even as they grow. As Erikson writes: “[A newborn's] in born and more or less co-ordinated ability to take in by mouth meets the breast, and the mother's and the society's more or less co-ordinated ability and intention to feed him and to welcome him” (1950, p. 72). It follows that any interruption between this “coordinated” call and response between human beings around the proverbial hearth—interruptions that corporations have endeavored to create for decades—would have serious consequences for child development.

As many modern philosophers have also argued, one primary consequence of relying on corporations rather than ourselves for food is a sense of being separated, spiritually or psychologically, from ourselves and from our communities. Karl Marx (1844) in particular anticipated this problem when considering the impact of the Industrial Revolution on identity—on the pride a person takes in producing an object by for another's enjoyment, and the “alienation” one feels when producing goods in a factory or consuming factory-made goods.

Let us suppose that we had carried out production as human beings. Each of us would have, in two ways, affirmed himself, and the other person. (i) In my

production I would have objectified my individuality, its specific character, and, therefore, enjoyed not only an individual manifestation of my life during the activity, but also, when looking at the object, I would have the individual pleasure of knowing my personality to be objective, visible to the senses, and, hence, a power beyond all doubt. (ii) In your enjoyment, or use, of my product I would have the direct enjoyment both of being conscious of having satisfied a human need by my work, that is, of having objectified man's essential nature, and of having thus created an object corresponding to the need of another man's essential nature . . . Our products would be so many mirrors in which we saw reflected our essential nature (Marx, 1844).

Halpern (2008) argues that the loss of human-to-human connection wrought by the rise in factory-processed foods has resulted in a desperate, almost subconscious bid to buy back some semblance of identity. Alienated from ourselves and our pasts, we are compelled to purchase a frozen lasagna or bag of dumplings that promises to taste just like Grandma's, which we never learned to make, or like the "artisanal" products that might have been freely traded among neighbors in the days before factories took over. Ironically, the profits accrue to the very corporations that have worked so hard to pry these objects and skills away from us, by convincing us they have no value and are in fact not worth the effort. Right now, we are buying this state of affairs, literally and figuratively, year after year, even though it is making us unhappy and unhealthy. The flipside, then, is to highlight the social and psychological benefits of creating food objects needed by oneself and by others (i.e., cooking), such as improving one's sense of self-

esteem and relationships with loved ones (significant “pull” factors for children and adults alike).

What we really learn when we eat together. Educators and parents in particular should also consider the moral and ethical dimensions of food when creating food-focused curricula. Food remains a powerful force for care and control as well as sustenance. Books like *Where the Wild Things Are* (Sendak, 1963), *In the Night Kitchen* (Sendak, 1970) and *The Boy Who Ate Around* (Drescher, 1994), among myriad others, ably mine these rich themes (Keeling & Pollard, 1999). These stories show us that food represents not just fuel, but a tool of behavior modification, of pleasure and punishment, when it is given or withheld in the context of children’s adherence to behavior norms (i.e., *Where the Wild Things Are*). It shows us that food is a way for children to negotiate the boundaries between what is familiar and unfamiliar (and sometimes, to them, what is therefore scary or not scary), and that an open mouth, when confronting the new and different, can sometimes signify the underlying maturity, confidence and tolerance of an open mind (i.e. *The Boy Who Ate Around*). It shows that adults must consciously socialize children in the practice of approaching all food, whether it is prepared by your mother or far from home, with a stance of tolerance and respect.

It follows that without the ability to feed and be fed outside of corporate intermediation, children may lose not only good table manners, adventurous habits or the ability to tune into cultural cues, but a certain level of civilized-ness that has heretofore defined our humanity. As Pollan (2009) argues:

Cooking gave us not just the meal but also the occasion: the practice of eating together at an appointed time and place. This was something new under the sun,

for the forager of raw food would likely have fed himself on the go and alone, like the animals. (Or, come to think of it, like the industrial eaters we've become, grazing at gas stations and skipping meals.) But sitting down to common meals, making eye contact, sharing food, all served to civilize us ... If cooking is as central to human identity and culture ... it stands to reason that the decline of cooking in our time would have a profound effect on modern life. (Pollan, 2009)

Thus, when we create the conditions for children to be socialized around the proverbial “campfire,” in our kitchens and classrooms, we are also adding a final, essential “pull” factor: the invitation to return to a basic sense of connection and humanity.

20th century problems, 21st century solutions. Every five years, since 1980, the U.S. government has released guidelines on what constitutes a healthy diet. While the government has changed its stance significantly over the years regarding the role of sugar, cholesterol, sodium and saturated fats, “the core tenants of a healthy diet (lots of vegetables, fruits and lean meats) have not changed” (Mohney & Iyer, 2016). Hence, it behooves those of us who are interested in teaching children about nutrition—among other useful things related to food—to focus on the eating and handling of plant-based foods.

Studies show that while even women who are stay-at-home mothers are cooking less now than they were 40 years ago, poor women who cook at home are more likely to eat a healthy diet than wealthier women who do not (Pollan, 2009). Improved maternal health extends to the children eating their mothers' home-cooked meals: a 2014 study found that “more frequent family meals and consumption of home-prepared dinners were

associated with healthier child dietary intake in several areas” (Applehans, Warin, Schneider & Pagoto, 2014).

There is much encouraging data to suggest that teaching children how to prepare and eat healthy foods in schools has a “trickle up” effect (Demas, 1993), positively and significantly impacting children’s eating patterns at home (Edible Schoolyard, 2015) as well as family eating behaviors (Demas, 1994). Programming that focuses on providing children with some connection to the *production* of food, by growing it *or* cooking it, is especially effective in convincing them to try new and healthy foods (Kramer, 2014). A pattern of cooking at home, which can be sustained by these changes at school, has been found to correlate more strongly with lower incidences of obesity than any other factor—more than the role of female participation in the labor force or even income/social class, two culprits more often blamed for diet-related health problems (Pollan, 2009).

Conclusion. In America, we live within a food system in which there are haves and have nots. Some children come from families that are comfortable cooking plant-based foods from scratch, and will reap the benefits (health, longevity, a sense of individual purpose and communal identity). Some children do not, and will face the risks of a more uncertain future: one potentially curtailed by diet-related diseases of the body, as well as a more subtle sense of alienation from self and community that can be imagined as a kind of disease of the spirit. In the classrooms of the future, we may see some children who are eager to pile up garden-fresh ingredients on their plates, having grown and prepared them at home, but we may increasingly see children who are afraid of these foods, leaving educators to witness helplessly the flow of expensive nutrients from salad bar to trash can, even as pressure builds from parents (typically the “haves”)

for schools to offer these better options. We will have children arriving in schools who have had adequate, healthy meals of whole foods full of fruits and veggies before the school bell rings, while increasingly, other vulnerable students will have eaten meals of refined sugars and little protein, or nothing at all, leaving teachers to scrounge in their desks for a bag of chips or a banana so students may learn. We will have children who have been taught at the dinner table about how to share, to try new things, and to clean up, and children who lack these skills, obligating teachers to fill in these gaps in socialization. To put it bluntly: this is a problem that schools *already have*, and thus, one they should be desperate to fix.

My curriculum aims to point the way toward some methods for doing so. And while my *rationale* for this curriculum relies on modern data that suggest that food-focused education can save or improve the lives of many students, particularly our most vulnerable students, the *content* of this curriculum relies more heavily on qualitative, Progressive ideas about education and identity that point to the increased quality of life, sense of autonomy and connection that can come with the act of cooking.

Developmental Considerations

The good news for educators undertaking a program of food education is that children, for the most part, will already come with an existing foundation of background knowledge and interest. Eating takes place, in some form, in every home and in every school, every day. Thus, it is among the few universals, in our diverse society, that we can count on to play a role in our students' lives. This should come as no surprise to Bank Street educators who are trained in the approach of using observation as assessment and justification for pedagogical decisionmaking:

Something of children's attitudes toward themselves is bound to come through [during mealtime] as well as the degree of smoothness of functioning. It is certainly an indication of self-confidence and social strength, for example, if children take care of their own body needs when they are coordinated well enough to do so. Conversely, it may be an indication of stress when children cannot tolerate waiting for food, take more on their plate than they can possibly consume, or are unable to enjoy the social nature of eating with others. (Cohen, Stern, Balaban & Gropper, 2008, p. 21)

In taking my own observational notes on my students throughout the years, I have seen many data-rich scenes unfold around food. I have seen students refuse food in protest, share and barter snacks even when forbidden to do so, engage in long-standing feuds with assigned table partners that interfere with eating, create unique concoctions from salad bar ingredients and show them off to their friends, or read all the way through lunchtime at the cafeteria table, oblivious to the scene of rushed institutional gustation all around them. These observations, conducted in multiple school settings across multiple neighborhoods and continents, suggest to me that food figures prominently in every school's "hidden curriculum," which conveys to students where they stand socially as well as academically (Giroux & Penna, 1983).

Based on my observations and my understanding of the theoretical literature on food, I believe that children are *already* learning from teachers about the "hidden curriculum" of food, simply by watching them, much as they once learned about food by sitting next to adults around the proverbial Paleolithic fire (Rogoff, 2003; Pollan, 2009). I've seen some adults command students to eat or to stop eating in authoritative tones, in

compliance with social norms or school schedules, while other teachers quietly cue the students to assist them in understanding and meeting mealtime expectations. These actions teach children different implicit lessons about whose job it is to regulate one's appetites and behavior, and to interpret and act on the codes of power in the room. I've seen some adults ignore children entirely during lunchtime, responding with indignance when interrupted by children's social dilemmas or banana-peeling needs during their break time, while other teachers are content to eat their sandwiches at the same table as the children. These actions teach children different implicit lessons about the boundaries between the worlds of children and adults, and between formal and informal learning.

All of these eating behaviors reveal something important about the themes discussed above: about a person's relationship to oneself, and to the group. They also suggest that most students will bring a variety of experiences and funds of knowledge to the subject, as will teachers.

Thus, the primary question for teachers preparing a unit on food, even for very young students, will not be "Are my students developmentally ready to learn about food?" or even "Are we ready to teach about food?" but "Am I ready to teach about food *explicitly, rather than implicitly?*"

Teaching upper elementary school students. I have seen many good books and curricula available for teachers of preschoolers, focused on developing sensory skills and vocabulary regarding tastes (i.e., see Koistinen & Ruhanen, 2009). I have also seen some remarkable new work on social justice for children in middle school and high school, focused on bringing more equity to our food systems (i.e., see Gale, 2006). However, I have found that upper elementary school children appear particularly ripe for *learning*

about how to cook and talk about cooking in a more formal, academic way. Ironically, they seem to suffer from a dearth of good curricula pitched to their level (see section entitled “Examination and Critique of Existing Materials”).

Students aged 8-10 already have a developmental desire to acquire competence with the tools of their culture, a natural interest in becoming competent members of it, and a growing physical ability to do so (Wood, 2007; Erikson, 1950). We must simply change the dialectical plane on which contemplation and discussion of food takes place, calling it up from the subconscious and into the conscious, via the same kind of careful planning and scaffolding that we do with all other kinds of teaching.

Physically, students aged 8-10 are increasingly independent, much more so than in years past, with more well-developed fine motor skills that make most “grown-up” cooking projects possible with proper supervision (Wood 2007). This is an exciting prospect for adults and children who wish to collaborate on making “real” recipes with “real” tools, such as frying pans, rice cookers, blenders and knives (at their teachers’ discretion).

Socially, students at this age are increasingly more interested in taking initiative to plan and complete projects and to understand how “work” is done by adults in the “real world,” a desire that gradually (though still inconsistently) overtakes their desire to engage in free play or with fairy tales and imaginary heroes. This gives them not only the physical skill, but the attentional stamina to see “real” recipes through (Erikson, 1950). It also makes it possible and rewarding to organize research groups of students to investigate and prepare dishes in an in-depth way. Roles in research groups may include

writers, photographers, recipe readers, note-takers and of course, multiple stirrers around the mixing bowl.

Children at this age tend to be social butterflies, and are most productive when working in groups (Wood, 2007, p. 89). This increased orientation toward the group provides myriad opportunities for students to “scaffold” one another, supporting each other’s learning by sharing what they know as individuals (Vygotsky, 1978). Moreover, children at this age are becoming increasingly less egocentric and more concerned with their role inside the group, particularly their group of peers (Wood, 2007; Erikson, 1950). Their infectious energy sometimes manifests as a tendency to push boundaries, but their increasing social focus means they can also actively participate in creating and maintaining the norms of their communities. This can be a boon for teachers working to maintain safety standards for food and tools, as well as norms of respect for other students’ food cultures; the students themselves can be more deeply involved than younger students in developing the “rules,” sharing funds of knowledge about kitchen best practices, and keeping each other accountable for kind and safe behavior.

It follows that a hallmark challenge for educators working with food and children at this age is to simultaneously contain and channel their key characteristics: their growing energy and capability, their autonomy and independence, and their desire to work cooperatively and productively in a group. Meanwhile, educators must continue to socialize 8-10-year-old children in the norms that will keep their bodies and feelings safe inside the learning environment, and to engage children in keeping each other accountable for observing these norms.

A note on mixed-age groups. Vygotsky (1978) noted that mixed-age groups, including capable adults as well as capable older children working alongside younger children, can also be fruitful learning environments. After teaching this food-based curriculum to children ranging from 8-10, with an adult co-teacher, I have found this to be true in my experience. As Rogoff (2003) has found, this is a learning situation that was typical for children of our species not so long ago, as they learned to hunt, gather and prepare foods in partnership with older community members. More modern observers have noted that older children are still eager to help younger children to learn, while younger children remain best able to learn from older children (Erikson, 1950).

Examination and Critique of Existing Materials

I have spent roughly the same amount of time during my career working in food as I have working in education. Why do I believe it is necessary to develop new curriculum on the age-old subject of food? Because these two career fields I speak of—the food world and the education world—are not yet in dialogue. Thus, there are many contributions left to make as we create a space in between. That is, a space where people who make a living by making food can acquire some of the skillful pedagogical techniques that trained educators use for all types of content, and where people trained as educators can make the best use of the content knowledge and passion of those who spend their lives studying the subject of food. Based on my experience in both fields, the status quo we have today is one in which these groups of people, working to educate children for the same reasons (as described in the rationale), are working in silos. This means that much of what is available is not as good as it could be with a better synthesis of ideas, gleaned across disciplines.

Additionally, the educators who are currently endeavoring to innovate and respond to the needs I have articulated above are not always in dialogue with one another. Though emerging networks such as the Farm-Based Education Network, and institutions such as the Edible Schoolyard and the New York Botanical Garden, are making it easier for educators to connect and build capacity around food and gardening, many of our best Progressive curricula remain embedded in the heads of our most talented and seasoned educators, and are not formally written down.

Additionally, the resulting interdisciplinary curriculum that I envision as possible would be ideal for students in the upper elementary grades, and they are not well-served by the existing literature. As mentioned previously, the highest-quality curricular materials I have found appear to be targeting preschoolers and older students, when it is the academic foci for the upper elementary grades (3-5) that best align with the underpinning understandings that food-focused learning employs, and the developmental stage of children in this age group (8-10) lends itself perfectly to the cognitive challenges that food-focused learning presents. Meanwhile, the non-curricular materials that exist for this age group do not always seem to be written with pedagogical best practices in mind, making them developmentally inappropriate even if they contain high-quality content.

These three critiques form the basis of my justification for creating new curriculum; I detail more observations below. I include these critiques, however, with a caveat: these are all based in experiences and training I have acquired over a decade, but are by no means meant to be generalizations or universals that dismiss the good work that may currently be happening out of sight, in schools I have not seen or books I have not read. As mentioned above, one aspect of our current status quo is that few centralized

sources of information exist on the subject of food education in the upper elementary grades. It follows that one implication of my critique is that there is a need not only for written curricula, but for publications and professional organizations to provide a site for people working in this field to connect and share ideas and curricula already developed. It is my hope that one day, we will not be re-inventing this age-old wheel when it comes to educating children about food, but rather, we will all be rolling along together, gathering momentum, toward a happier, healthier future for ourselves and our planet.

First, we need more more education in food. By this I mean: there are many good cookbooks available for children of this age group, but many food-focused resources do not reflect the careful understandings of children that teachers and authors of curricular material strive to embody in their work. When there is not enough education in food, I have found that the resulting issues ensue.

First, many traditional cookbooks for children are often *so* tightly focused on cooking that they fail to make holistic connections with other disciplines, connections that would justify the use of these resources in the classroom and deepen children's learning. I believe learning to fry an egg can be life-changing, of course, but many casual cookbook authors fail to take the learning one step further, helping children to see the many conceptual connections to be made to the formal academic curriculum, and to become better cooks in the process. This is why any good teacher knows that he/she can't substitute a resource off the neighborhood bookshelf for one designed specifically for the classroom—but this latter resource does not exist.

A good curriculum, as opposed to a cookbook, would address the best of both worlds, pairing exciting recipes with supplementary classroom activities and materials

that connect this hands-on experience to other academic concepts, i.e. the science of fermentation, or the logic underpinning fraction use in measurement.

Secondly, many food-focused materials created by non-educators are not pedagogic in their structure: that is, they do not include instructions or techniques that will guide *adults* in the best ways to organize the environment for the child. Given our current sociocultural context described earlier, in which many adults lack experience and confidence in the kitchen, this guidance is doubly important but rarely included. My bias in valuing my own training as an educator notwithstanding, I believe any adult would benefit from tips on how to set up a room for children to work independently, and in their own developmentally appropriate ways; to manage the varying needs and skills of children not related to oneself; and to answer and leverage the questions that will inevitably arise in ways that empower children to lead their own future investigations. Meanwhile, I have that adults who lack experience in the kitchen, or in the classroom with children, can bring unrealistic expectations or anxieties into the experiences—i.e. about the mess cooking will create, the safety challenges it may pose, or the problems related to a picky or oppositional student. They may also bring dogmatic attitudes about the “right” way to do things, the “right” diet, or other attitudes that may undermine students’ emerging identities and competencies. The maladaptive attitudes that untrained adults can bring to the cooking experience, then, can lead to the creation of an environment that makes a child *less* likely to enjoy cooking, even if the recipes themselves are well-written. A solid curricular guide should strive to address these issues proactively, without making assumptions about the background knowledge that children *or* adults will bring to the table.

Thirdly, many materials are not written with an accurate understanding of children's variability along a developmental continuum—i.e., the unique strengths and challenges children may face due to their unique cognitive skills, fine motor control, and literacy understandings, which may present challenges for them in cooking that would be less typical for adults. This creates an added burden on the adult to “translate” not only the tasks but the language of cookbooks that are pitched at too advanced a level, and adults are not always naturally or equally skilled in doing so. This goes for many of the titles that are on shelves today, which are increasingly more likely to be written by (or ghostwritten on behalf of) celebrities rather than content-area experts who know children well (Leson, 2008). If adults need to work just as hard to adapt these resources to their students as they would work to develop their own, they cease to be useful as comprehensive curricular materials.

Additionally, and more understandably, most cookbooks available commercially in bookstores do not help educators to *justify* engaging food-focused activities in the classroom setting. For example, Marion Cunningham's *Cooking With Children* (1995) is an excellent resource, authored by a skillful cook, for adults and children aged 8-10 who are interested in cooking together. She claims that “when they have mastered the fifteen lessons [in the book] they can cook just about anything.” With the help of a grown-up, a child may indeed acquire these skills—the lessons are comprehensive and engaging, and designed to build on one another rather than acting as stand-alone activities. But the author presumes there are no other pressures the adult may be under, i.e., ensuring that the activities also meet federal and state standards, defending the class time spent to parents and administrators, or organizing the learning space for a variety of children and

needs. (An exemplar in this area, albeit an outdated one geared toward preschoolers, is Feeney's 1992 *Cooking: A Practical Guide for Teaching Young Children*, which helps teachers to create rationales for cooking to use with parents and administrators.)

While none of the above issues would actually cause harm to a child, there are a few risks inherent in food materials that might render them wholly inappropriate for classroom use, even as supplementary resources. Some promote what David Sobel (1998) terms "ecophobia," while others promote cultural bias; both should be avoided.

Sobel (1998) defines "ecophobia" as a sense of disconnectedness and helplessness when facing the world's abstract ecological problems, and criticizes many well-intentioned (but developmentally inappropriate) materials for children that promote it. This includes curricula that plunge young children into modern controversies about factory farming or genetically-modified organisms, without first providing them with a basic understanding of the foundational concepts of food (i.e., where it comes from, how it's grown or made, and how molecules and microorganisms play a role in the above). Sobel argues that we need to help young children to connect to the Earth before we ask them to be responsible for it. This is something that takes time, particularly for children who do not already have experience with gardening or hands-on cooking. It follows that children, particularly those under ten, deserve a chance to first meaningfully cultivate a fear-free relationship with food and environment via hands-on exploration. Pushing a learner to contemplate worldwide issues of fairness beforehand is, ironically, a rather unfair thing for an adult to do to a child who is not ready for that.

Additionally, there is the harm that can be caused to children when cookbooks from past eras of the "food world," containing harmful stereotypes, are presented

uncritically. Thanks to influential works by Derman-Sparks (1989), Bishop (1990), and Takaki (1993), among many others, as well as advances in multicultural education since the 1990s, this is an issue with which educators are increasingly aware—but the book publishing world has yet to catch up (Cooperative Children’s Book Center at the University of Wisconsin, 2016). Many books on food and gardening that I have examined contain cultural biases and assumptions about their readers (i.e., that they are White, or enjoy foods commonly associate with White culture) that make them inappropriate for stand-alone use with today’s multicultural student and teacher populations. If they are read-alouds, the Protagonists may all be White. If they discuss “healthy” or “clean” foods, these foods may be foods typically valued and eaten primarily by White readers, while children from other cultural groups may be less comfortable identifying with or preparing these foods. If they are designed as guides for adults, they may contain scant or no language on the existence of or the challenges faced by diverse groups of children: i.e., no mention of differentiating material for English Language Learners (ELLs), recent immigrants or children with special needs. Unfortunately, most classic kids’ cookbooks from the Betty Crocker era and read-aloud books tend to fall into this category, requiring them to be thoughtfully balanced with other materials. (See “Finding learning resources for the kitchen classroom: an anti-bias framework” in the Curriculum section for further discussion of this pressing 21st-century work.)

Meanwhile, there is not enough food in education. Given the dearth of appropriate materials that help teachers create and justify hands-on cooking activities in the classroom, this is perhaps no surprise.. In my five years of teaching in New York City schools, I have more often seen food examined in the abstract—i.e., fifth grade students

examining a theoretical garden in a study of mathematical arrays, or a group of third graders looking at pictures of Native Americans harvesting oysters—than in the concrete. While I have seen cooking skillfully integrated, in one-off sessions, within larger units of study, I have not yet seen students engaged yet in a comprehensive, interdisciplinary study of the ways in which they eat, or in a research project that allows them to gain some skill with cooking and take it further.

Though my evidence for the obstacles that are preventing teachers from mining this world of potential is highly anecdotal—on an individual level, they confess that they're afraid of mess, of allergies, of making a mistake—my suspicion is that the sociocultural context that has stripped so many families of their inclination to cook is also influencing our thinking in schools. Corporations have spent millions of dollars over many decades, convincing us that cooking is too hard, not important, beneath the educated person with better options, and thus better left to someone else. And even as educators, we who consider ourselves highly critical readers—we keep buying it.

To their credit, many teachers are actively working against this disempowering status quo by creatively employing food studies as both the means and the end to their work in classrooms. The curriculum I have long envisioned, a curriculum representing the skillful synthesis of food expertise and “kid expertise,” stands on the shoulders of the educators who have come before me. Before writing this curriculum, I conducted dozens of observations, in classrooms, on farms and in gardens, and engaged in many collaborative projects using food in partnership with like-minded colleagues. (See “Acknowledgements” for the ways in which their work has informed my work.)

Of particular interest to me has been witnessing the many ways that food can be seamlessly combined with other subjects in the upper elementary grades, deepening students' experiences with academic subjects in ways that exemplify John Dewey's approach to *meaningful experiences as education* (1916).

For example, in social studies I have seen students working with cornmeal, strawberries and maple syrup, ingredients used by Native Americans and early Northeastern colonial settlers. This allowed children to contemplate the effort that went into the procurement and production of these foods, and to compare this with the relatively easy access they enjoy to these ingredients today.

In math, I have seen students engage in ratio table work related to *The Big Dinner*, a food-themed math curriculum (Fosnot, 2007) by planning a hypothetical Thanksgiving dinner from scratch, calculating their budget and cooking time using ratio tables. (Though the curriculum did not call for it, teachers brought in market circulars from different neighborhoods for students to use in real-life calculations, prompting some spontaneous reflections on social class, food cost, and differing family food preferences.)

In science, I have seen students harvest eggs on a farm, undertake sociological studies to determine which flavors of bagel or ice cream are favorites in their communities, and wonder aloud whether salmonella can "fly through the air." These questions led quite naturally to discussions about the biological life cycle and nuances of molecular chemistry.

In literacy, I have seen students author nonfiction procedural texts to guide readers lovingly through favorite recipes, and describe foods consumed on family trips or over holidays with great gusto. These students made me think of the infamous line by

M.F.K. Fisher: “When I write of hunger, I am really writing about love and the hunger for it, and warmth and the love of it and the hunger for it... and then the warmth and richness and fine reality of hunger satisfied ... and it is all one” (1990, p. 353). Put another way: all the components that a good writing teacher would like to see in a personal narrative, from sensory details to larger themes of love and even deprivation, appear naturally when students write about food.

My primary critique of all of this engaging work, which set the bar for my own in this Integrative Master’s Project, is that barely any trace of it was left behind. With the exception of *The Big Dinner*, nothing we did was written down, so that I could repeat my results and share them with other educators interested in doing the same. While no skillful teacher wants to follow a script, having a record of these educator-created lessons would allow our time to be better spent deepening our collective understanding of this content and adding to it. As long as their baked-from-scratch curricula remains more oral tradition and less a set of lessons, I fear that my colleagues who cook will remain the exceptions rather than the rule.

I also found myself wishing that I had a theoretical and political framework that would help me to justify extending or continuing these projects from year to year, within and beyond the schools where these projects were introduced. While consulting the Common Core State Standards (CCSS) was not as frequently required of me as an educator in a private school setting, the CCSS have become such a driving force in the planning of my public school colleagues that the success of a curriculum may still rise and fall based on its alignment with public school prerogatives. Moreover, for any formally educative work to be seen as something more than a rough draft, a one-off or an

experiment to be indulged in a school setting, it needs to make sense in the context of larger, long-term community priorities.

Where good materials in both food and education do exist, they are not geared toward children in grades 3-5. This, even though they are developmentally primed for it. There has been an explosion of interest in food within our culture in recent years (Pollan 2009). I have observed that many bookstores in New York City tend to carry anywhere from half a dozen to a dozen titles for children and families in their food sections or children's book sections. Many food websites and nonprofits offer activities for children, too. This would seem to underscore an existing interest among modern adults for materials that help them to cook with children. When I began my research for a new food-focused curriculum, I hoped I might find a buried treasure outside the world of upper elementary school curricula that could do the job for me.

Unfortunately, what I have found is many excellent, developmentally appropriate materials—for a different age group. Molly Katzen's masterful *Pretend Soup* (1994) and the aforementioned *Cooking: A Practical Guide for Teaching Young Children* (Feeney, 1992) are road-tested and developmentally-appropriate. These helpful guides were written with the needs of both teachers and parents in mind. They are wonderful places to search for rationales and for lesson ideas. But their objectives and attendant activities, designed for preschoolers, would require a great deal of adapting to be stimulating enough for the older children (aged 8-10) that I have in mind. The same is true for making them academically rigorous enough to justify use in a more formal curriculum. Meanwhile, the educators of The Food Project, based in Massachusetts, have authored *Growing Together* (2011) an inspiring guide for older youth, but the activities are more

appropriate for middle schoolers and up. What's missing is a commonly-available guide for the age group in between.

“Commonly-available” being an operative term here, as there are many resources created by nonprofits that are not currently available for educators in a coordinated way. I.e. the NYC nonprofit Edible Schoolyard, which has its origins in a project launched by Berkeley-based chef Alice Waters, has very helpful curricular guides for both cooking and gardening with this age group, and they have enriched my work and understanding immensely. Other organizations in the northeast with which I am acquainted, such as the Sylvia Center (NYC/Kinderhook, NY), Hudson Valley Seed (Beacon/Newburgh, NY) and City Sprouts (Boston, MA) have proprietary curricula that they have sometimes been kind enough to share upon request. However, they do not make these guides publicly available for all educators to download and use, and this is not their intent.

Additionally, many of these types of existing materials are relevant for a specific sociocultural context but not easily adaptable. This goes for many curricula developed specifically for farms and large gardens, which are not easily accessible for city children. Sometimes, there's just no substitute for the great outdoors.

In conclusion: we need more food in education, more education in food, and more of both for children in grades 3-5. As more and more people become interested in learning about food, many entities within education and outside of it (i.e. in the book publishing world) appear to be addressing the need for more learning materials, but are doing so independently, with mixed results. Many cookbooks and other materials available to the public would be improved if they took into consideration important insights from the education world about the ways children learn (and the ways that adults

carefully facilitate this learning, through careful planning and a thorough understanding of child development). Many high-quality experiences, designed by seasoned educators for individual schools, would have a greater impact if they were written down and shared with colleagues more intentionally, and if they were informed by the “real world” experiences of people working with food directly. Additionally, the good work being done to bridge the divide between schools and community by nonprofits would be improved if their materials were collated and arranged in an interdisciplinary fashion that helped students to connect their activities with food to other academic disciplines, while also being arranged along a linear trajectory that helped students build towards mastery of skills. Thus, there is a need for a new curriculum to address these existing issues in the current body of literature.

Differences Between New and Existing Material

This curriculum differs from the existing materials related to food primarily by integrating them, creating one *singular* resource that draws on best practices from many disciplines, and that fills in the gaps I have identified in the literature. It also builds upon best practices and structures of strong units in literacy, math, science and social studies. I have assembled these resources along an inquiry-based trajectory based on my own experiences as a working nonfiction writer, focused on food.

This curriculum presumes no specific prior background knowledge in food for grown-ups or adults, and strives to create a base of shared experiences and skills before prompting students to ask research questions of their own, based on the experiential learning concepts of Dewey (1916). It also creates the kind of learning community in which research can be organically done with a variety of peers rather than a teacher-

created group. It presumes there will be some interplay between the students' identities, home cultures and curiosities and the content to be learned. In this way, it aims to set students up for an age-appropriate level of success as community members, cooks and researchers.

Because our unique experiences and attitudes toward food are colored by politics, culture and social class, this curriculum attempts to be conscious of bias in terms of assigning value to some foods over others. Instructions are provided for adults scaffolding the activities, as well as initial lists on food safety, kitchen supplies and building an anti-bias food library. It highlights the importance of building cultural competency, for both children and adults.

Taking for granted that food knowledge equals cultural currency, the curriculum aims to make the relationships between food, culture and power explicit, and to ensure that the community has an opportunity to create shared norms and to see many different role models for success reflected back to them, not an "unbearably White" (Meek & Tarlau, 2015) version of good food or food knowledge.

Unlike current nonfiction offerings and casual cookbooks, this curriculum attempts to integrate ways of knowing and expressing that draw from the academic disciplines of literacy, math, science and social studies. During the community building phase, students investigate their own cultures and those of peers using word games, science experiments, texts on chemistry and history, mathematical surveys and written reflections. During the taste tests and immersion phase, they deepen their understanding by using science to develop written recipes, using mentor texts to experiment with other genres of writing, and engaging in field trips to investigate their neighborhood's food

systems during which they take notes. In the final phase, students use research methodologies that combine best practices from the fields of literacy, science and social studies to explore and develop a recipe of their choice. Families come together at the end to share in their published works in literacy, their discoveries in social studies, their conclusions in science and their survey findings in math, all developed within the context of the class community.

The use of food would seem to be particularly relevant to the teaching of nonfiction reading and writing—that is, when nonfiction is conceptualized as a thinking and talking tool for many real-world disciplines. Researching food and developing recipes necessarily involves writing about one’s mathematical thinking, scientific discoveries, or historical observations, in ways that children might find useful (and that adult food writers and researchers certainly do).

Accordingly, this curriculum acknowledges that working journalists, scientists and innovators use many dynamic, hands-on information-gathering techniques, such as interviewing, observing and experimenting, to reach new and useful conclusions, and to share them with audiences hungry for this new knowledge. This broader concept of nonfiction writing is thus defined here as *writing done to convey and connect new discoveries made within the disciplines of science, math and social studies*.

These methods of interviewing, observing and experimenting are methods 8-to-10-year-old children tend are more developmentally disposed to enjoy (Wood, 2007). Children at this age like being physically active, they are social and inquisitive, and they are fascinated by the ways in which real people do real jobs and make real discoveries. While reading good books should be part of their research diet as nonfiction writers, my

goal here is to give children a wider range of age-appropriate opportunities, insights and choices as they work to discover new information.

While this curriculum offers the chance to study food, something with which both teachers and students have firsthand experience, it need not be constrained by what teachers already know and what is already contained in the books in the room. Moreover, while this curriculum provides accessible mentor texts for children and invites them to learn the structures of nonfiction writing through them, their products are not constrained by the need to reproduce superficial aspects of these books (i.e. the table of contents) where they are not organically needed. Instead, it helps students to see how a variety of specific information-gathering techniques lead into specific text structures designed to convey information efficiently, and even entertainingly, to the readers that need this information.

This curriculum also builds on existing quality cookbooks and activities for children, but does the work of adapting each activity for this age group. The recipes and texts herein were written or vetted by me, then tested with 8-to-10-year-old students. Educators may need to make some adjustments to make the texts appropriate for their age groups, but as most are designed to be group activities, it is likely that students will be able to scaffold one another if they are grouped heterogeneously with regard to reading ability.

This curriculum organizes all activities into a linear academic curriculum that builds toward increasing mastery. The curriculum progresses through three stages: community building and brainstorming, taste testing and immersion, and a final research project. The ultimate goal is to provide children with opportunities to experience

increasing levels of competence and mastery with both writing about and cooking good food “from scratch.”

The curriculum concludes with suggestions for extending student learnings and connecting them to individual schools’ existing curricula. These extensions may lead to new discoveries made by children that were not already known to the adults in the room, and may involve foods from cultures with which teachers are unfamiliar. The final celebration invites adults and children to come together to learn from each other’s discoveries and cherished traditions. It follows that the process and the product may never look or feel the same way twice.

In general, this curriculum aims to be adaptable; it is not only for well-resourced or Progressive schools. While teachers are encouraged to follow the general linear trajectory of the curriculum, building towards greater mastery, teachers can mix and match activities and recipes along the way to suit their classroom communities, their available timeframes, and the pressing questions posed by their own student communities. The curriculum aims to avoid presuming certain resources will be available, though it does take as a departure point the typical classroom (with four walls, tables or desks, electrical outlets and chart paper). For resources that are not common to classrooms, some suggestions are provided about how to procure them.

A nonfiction curriculum centered on something as interdisciplinary and personal as food can give young writers the chance to see how their work in science, math and social studies can be applied directly to literacy, and how nonfiction writers within these disciplines gather their information via profession-specific processes of inquiry. Moreover, nonfiction writing about food should offer the chance to see how conclusions

gleaned from analysis conducted in these methodologies can be combined and shared with a wider audience to help this audience understand something new. This curriculum aims to show young writers something of the wonder adults experience when they encounter, learn about and share new discoveries with one another, be they edible or otherwise.

Introduction to This Curriculum

Inherent in the challenge of embarking on food-focused learning is the task of creating a “medium” or learning *environment* (Dewey, 1916, p. 15). that has the capacity to facilitate food-focused learning *activities*. Thus, my curriculum is divided into two main sections: one on the environment, and one on the activities.

The first section is entitled “Mis en place,” which echoes the French culinary term that means “to put in place”—that is, to assemble one’s ingredients and prepare them to be cooked before assembling them into the final meal. The second section is “Activities and lesson plans,” which details what students and teachers can do together in the space that has been created.

Within the first section, “Mis en place,” I have included subsections on the following:

1. Creating a kitchen classroom. This section supports the selection of materials to support students’ understandings of the physical world of food.
2. Safety norms for kitchen classrooms. This section further supports the physical safety of students in the environment.

3. Finding learning resources for the kitchen classroom: an anti-bias framework. This section supports the selection of materials (i.e. books, videos, magazines) that will deepen students' understandings of the social world of food and establish a common basis of background knowledge, using a framework that provides equity of access to all materials.
4. Books to support this unit. This section supports teachers as they select appropriate resources to create an equitable environment where all students see their identities mirrored in the physical and social worlds of food.
5. Suggested accommodations for students with special needs. This section supports teachers' ability to modify both the environment and the activities that follow so that students enjoy equity of access to the experiences and content of the curriculum.

Within the second section, "Activities and lesson plans," I have included subsections on the following:

1. Community building activities. This section supports the creation of a safe and connected learning community, allowing students to access the content.
2. Early immersion activities. This section helps the teacher and students to create a shared foundation of background knowledge and community norms, to support the work of the primary recipe investigation.
3. Primary recipe investigation. This section leads students and teachers through an in-depth, interdisciplinary investigation of two foundational

recipes (bread and sauce), following an inquiry-based trajectory that guides students through key processes embedded in the academic disciplines of literacy, math, science and social studies (i.e. the scientific method, the stages of the writing process). My hope and expectation is that teachers and students will enrich this investigation by choosing their own recipes to add on and explore. (I also offer suggestions on ways to do so in this section.)

4. Investigation extensions. This section offers suggestions for extending the work of this curriculum and connecting it to other existing units of study or community priorities in the learning setting.

Mis En Place

In restaurant kitchens, the idea of *mis en place* (in French, this means “putting everything in place”) is near-religion. “Doing your *mis*” or “*mis*-ing out a recipe” is shorthand for buying, measuring, washing, and/or chopping all of your ingredients before you combine or cook them. This helps cooks to focus on one task at a time, and ensures you don’t start a recipe without having everything on hand.

By the same token, this section helps the educator to ensure that the space is ready and equipped with everything necessary for food-focused learning to take place, before children ever step foot in the room. While some adjustment is always necessary mid-process, careful preparation and planning of the space will make it more likely that the activities that unfold within the space run smoothly and safely for all involved.

Creating a Kitchen Classroom

As teachers well know, children learn best in a physically and emotionally safe environment (Association for Supervision and Curriculum Development [ASCD], 2011). At the same time, creating the conditions for children to be as independent as possible within this safe container should be the aim of every educator (Peters, 2008; Feeney, 1992; Dewey, 1938). As Maria Montessori once said, "What is the greatest sign of success for a teacher transformed? It is to be able to say, 'The children are now working as if I did not exist'" (as cited in Peters, 2008).

To facilitate the creation of such a space, this section contains tips on the following:

1. Creating a basic kitchen supply collection
2. Creating a child-friendly food preparation space

These guidelines were informed by the work of food educators such as Lisa Feeney (1992), Marion Cunningham (1995), and the staff of NYC's Edible Schoolyard (2017). The latter organization, a nonprofit with ties to Berkeley-based chef Alice Waters, provides ongoing courses for educators at little to no cost. Upon request, they also provide handouts for educators that include many of the best practices outlined below. (Visit www.edibleschoolyardnyc.org for more details and current contact information.)

Creating a basic kitchen supply collection. This section details the creation of a kitchen supply collection, suitable for basic food preparation of dishes such as salads and sandwiches. (Subsequent sections detail ways you can arrange and add on to this collection based on your specific learning space, i.e. adding a heat source to allow for more advanced cooking projects, i.e. baking or frying.)

This list assumes one work station with four students working at a time. You may divide or double it based on the number of stations you wish to have in the room.

In general, the brand OXO is strongly recommended for classroom use, particularly their Good Grips line, as their tools have been created with principles of Universal Design in mind, as have the best classroom accommodations for individuals with special needs (“Our Philosophy,” n.d.; see also National Center on Universal Design for Learning, n.d.). Many other items can also be found at dollar stores, thrift stores, flea markets and estate sales for very little money.

Depending on your setting, it may be appropriate to ask families or local businesses for help. They may be able to donate or lend some or all of these items. Tools such as MyRegistry.com or Amazon Wishlist allow users to seek out the best deals on each item online and list them in one place, allowing families to purchase the items that best suit their budget online, then have them shipped to the school. Alternatively, teachers can use fundraising websites such as GoFundMe.com to crowdsource the classroom budget for kitchen items, then purchase the tools themselves.

For food preparation.

- 2-4 half-sheet or quarter-sheet baking pans (for organizing supplies)
- 8+ small prep bowls, ramekins or plastic takeout containers (for organizing ingredients)
- 2+ metal mixing bowls (i.e. for “wet” and “dry” ingredients in baking)
- 4 wooden spoons
- 4 child-friendly knives for chopping
- 4 pairs of safety scissors (for snipping garnishes i.e. parsley, scallion, chives)

- 1 8-inch sharp chef's knife (for teacher use only)
- 1 vegetable peeler (preferably Y-shaped)
- 1 grater (preferably one that sits flat on a surface, though a box grater will do)
- 4 cutting boards (preferably with rubber grips on the sides to prevent slippage)
- 4 liquid measuring cups
- 2 sets dry measuring cups
- 2 sets measuring spoons
- 2 pairs of tongs
- 1+ labeled, clear bins for holding tools (i.e. one dedicated to measuring cups)
- 1+ labeled, clear bins for holding bulk food items (i.e. flour)
- 1 butane or induction stove
- 1 toaster oven
- 1 full set of pots and pans (check for induction readiness if using induction heat)
- 1 pair of oven mitts

For serving.

- Drinking cups
- Plates & bowls
- Spoons & forks
- Napkins or paper towels

For cleaning up.

- 3 plastic bins or buckets for dishwashing
- Dish soap
- Sponges

- Clean dish towels
- Food storage bags
- Plastic wrap
- Lidded to-go containers

Bulk food supplies to have on hand.

- Flour
- Sugar
- Salt & pepper
- Soy sauce
- Baking soda
- Baking powder
- Cooking oil
- White vinegar (as well as other flavored vinegars of your choice)

Creating a child-friendly food preparation space. A kitchen classroom can be defined as a “real” kitchen, with modern appliances and counter space to spare. Or it can be as simple as a cart in the classroom containing a plug-in induction burner and an assortment of bowls and spoons (with some help from the refrigerator in the teacher’s lounge or cafeteria). The guidelines below cover the basics of creating a space in which children can prepare a wide array of hot and cold recipes; you may adapt them to your setting.

Creating and checking the space.

- Identify the place where supplies will be kept, and label the places where they can be found with large labels and pictures (i.e. bins or cupboards labeled for bowls,

mixing tools, measuring cups, and measuring spoons). This will allow students to help with setup and cleanup.

- To deter pests, plan to keep all food and supplies (i.e. flour, rice) 6 inches off the floor, in glass or plastic containers that are impervious to chewing, with tight lids.
- To discourage bacterial growth, ensure refrigerator where food is stored is below 42F, and ensure freezer where food is stored is below 0F.

Creating a mis en place station.

- As mentioned above, the step of engaging in *mis en place* before assembling a dish helps cooks to focus on one task at a time, and ensures you don't start a recipe without having everything on hand. Creating a *mis en place* station, with a surface for measuring and preparing your ingredients (i.e. a countertop with bins full of measuring cups and spoons, near the cabinets and/or refrigerator, or a supply cart parked near a low table), makes this easy to do.
- *Mis en place* also allows you to move your tools from “in use” to “in the sink” in a batch, which makes it possible not only to clean *as* you cook, but to clean *before* you cook. For kitchen classrooms, you may decide that it's more expedient to “mis out” every recipe before a cooking activity, to avoid those “oh no!” moments when students mistakenly measure out 3 tablespoons of salt instead of 3 teaspoons for a dessert recipe. (This is a good choice for younger children.) Adult volunteers, older students doing volunteer work in school, or students in the classroom with assigned “chef” jobs, can do this during any downtime.
- To organize *mis* supplies, use quarter- or half-sheet trays with tall sides, so they can double as surface for holding prepared ingredients (i.e. chopped

vegetables can go back onto the pan, to be transferred into a soup at the stove), and transferring dirty dishes to the sink. Pre-measure ingredients small prep bowls, setting them onto the trays, which can be stacked in a corner. Perishable ingredients can be stored in clear Ball jars or plastic containers with lids in the nearest refrigerator.

- Alternatively, you can guide students through the process of doing their own “mis” before they begin cooking. This takes longer and can create more “oops” moments (particularly when students mix up their fractions, lose their place in a recipe, confuse “teaspoon” for “tablespoon,” or reach for the salt instead of the sugar). But it is more like “real” cooking, so if your hope is for children to generalize skills learned in school to a home setting, this can be a useful routine. (Also good choice for older children.)
- Either way, it is strongly recommended that you mis en place before you cook, and that you decide which system you are going to use before the unit. (And if necessary, recruit the helpers or design the classroom job systems you need to make it happen.) When students can follow the same routine every time, they’re likely to cook more successfully and speedily (leaving you time to engage their help with the dishes).

Creating a prep station.

- Determine the best child-friendly surface or area for preparing food (i.e. mixing cookie dough, snipping herbs with scissors). Cunningham (1995) advises: “It is important when you are cutting, slicing, chopping and mixing ingredients or kneading dough to have your work surface the right height. The average kitchen

countertop is too high for most [kids], so [kids should] either find a work table about 6 inches lower than the counter or else get a stool and stand on it. Your work surface should come to your waist so you have the full strength of your arms and hands to chop vegetables, roll out dough, and knead bread” (p. XIII).

- Determine how many students will work at this station at a time.
- Obtain child-safe knives and cutting boards for that number of students. Choices for knives can include paring knives and/or lettuce knives (available for about \$8 online), butter knives, or even plastic takeout knives. Providing a variety of choices for different comfort levels and hand sizes is ideal.
- Having one color of cutting board dedicated to preparing animal products vs. one for raw vegetables will help students be cognizant of avoiding cross-contamination.
- Have knife covers for non-lettuce knives to keep edges sharp (and thus safe), or wrap them in plastic wrap after use (an adult should do this).
- Purchase at least one bench scraper (about \$5) for moving food around on cutting boards, or transferring food from cutting boards to other surfaces or containers. This ensures knives will not leave students’ personal space and that knife surfaces will not be dulled prematurely.
- Place a clean, wet dishtowel at the station for cleaning up knives, cutting boards and small spills.

Securing a heat source.

- A plug-in portable induction stove (about \$80) can turn a classroom into a kitchen. It uses the force of magnets to create friction and heat, making it safer to

use than portable stoves that use butane. These require the use of induction-ready cookware and outlets for appropriate wattage.

- Electric skillets can serve as a cheaper alternative to induction burners.
- By the same token, plug-in portable toaster ovens are a good alternative to regular ovens, and plug-in crock pots can substitute for stovetop stock pots or Dutch ovens.
- Clear heat source use with the custodian or landlord first.
- Once you've identified a heat source, determine where your heat source will sit in the room if it is not stationary. Make a tape line on the floor to mark a safe distance for standing away from the heat.
- Tape all cords down to avoid tripping.
- Have a fire extinguisher and/or a canister of baking soda nearby to handle potential grease fires.
- Keep a well-stocked first aid kit nearby.
- Post instructions nearby on emergency procedures and discuss them ahead of time with students.

Serving food safely.

- Create a place to store clean plates and serving tools for serving cooked food.
- Ensure serving utensils and dishware are located a safe distance from prep stations and dishwashing areas to avoid confusion or cross-contamination (i.e. a plate previously holding raw meat accidentally being used to serve cooked meat).

Cleaning up.

- Use a simple diluted bleach spray to sanitize surfaces (1tbsp bleach:1 gallon water).
- Use disposable dish cloths or wash dish cloths frequently.
- Create a sink system, even where there's no sink, by using cheap plastic bins or buckets to create the same 3-sink system used in restaurants:
 - one with soapy water for soaking
 - one with clean water for scrubbing and rinsing
 - one with clean water with a touch of bleach (see ratio above)
- Have plastic gloves on hand to keep children's hands safe from the sanitizing solution, dishwashing solution and/or food debris (which can irritate sensitive skin).
- Have plenty of clean dish towels on hand for drying, and/or a place where dishes can air-dry safely.
- Add a visual reminder to students (or have them create a sign) indicating that knives must be hand-washed, not put in soapy sinks where they may not be seen.
- Share with students this "clean as you cook" wisdom from Cunningham (1995): If you clean up while you are waiting for water to boil, or for something to cool or bake, you will never mind doing all the clean-up when you finish cooking" (Cunningham, p. XIII).
- Encourage children to create centerpieces that can be placed on tables during shared eating times. (This may seem like a "cute" extra, but is used to great pedagogical effect at the Edible Schoolyard: Not only does placing student-made centerpieces on tables encourage ownership of the space and set a positive tone

for the meal, it can also be a helpful visual cue to distracted students that food preparation time is over and eating time is commencing.)

Planning for safe movement.

- Plan for traffic around garbage cans, handwashing station, dishes/flatware stations, and places to line up. Try not to put them all in one place.
- Label each station and storage compartment with a sign and a picture so that students can see and navigate them more independently.
- While groups can work on one task simultaneously, this requires more duplicates of the same tool. Alternatively, groups can rotate through stations featuring different tasks, preparing multiple parts of a meal without needing the same tools at the same time. I.e., if making a salad, one group can work on the chopping, while the other group mixes a dressing. This also allows you to work with a smaller number of materials (using only 4 lettuce knives at the chopping station, rather than requiring one for each student in a group of 12).
- If you are a single adult or teacher, recruit volunteers to increase your adult:child ratio. Many hands make light work, and safer students. (Parents are often willing, but helpers can even be older children, as long as they are emotionally mature, and seasoned hands in the kitchen when it comes to safety.)
- Alternatively or additionally, create an area where other children can work independently on a non-cooking extension of the lesson—i.e., reading a book or article about the food in the library, or playing a food-related game in partnerships—while you work with a small group.

Planning ahead for allergies.

- Before you begin to cook or to plan recipes for this unit, check in with/get permission from guardians before the start of the year/the start of the unit.
- Keep a list of allergies visible and check it before every class if you are working with multiple groups of children.
- Avoid using foods to which your students are allergic in foods; instead, adapt the recipes if possible. The most common allergens are meat, eggs, dairy, nuts, sesame and soy. Many online resources help caregivers adapt recipes along these lines.
- If a school nurse is on-site, ask him/her for training in using an EpiPen and advice/protocols for other allergy medications.
- Educate yourself about how your students' allergens function so that you can answer questions (yours and your students') about safety. I.e., understand the difference between legumes (peanuts, soybeans), tree nuts (almonds, cashews) and seeds (sunflower seeds, sesame seeds). Also understand the difference between allergens that cause skin reactions (which may be addressed via the use of gloves) vs. reactions that occur when allergens are ingested (which should be addressed by eliminating the ingredients completely).
- At the same time, do not limit your students' food experiences unnecessarily due to misunderstanding the nature of their allergies, or assuming all common allergens are off-limits. While some allergies relate to broad food categories (i.e. tree nut allergies), some allergies are more limited (i.e., being allergic to peanuts does not mean one is allergic to soybeans, even though they are both legumes).

- When in doubt, discuss the matter with parents of the children with specific allergies, and/or consult the school nurse or a pediatrician so that you are armed with facts, not fear.

Safety Norms for Kitchen Classrooms

Teachers should consult this list of tips and norms *before* beginning the unit, to consider what children will need to know in order to move through their specific space and chosen activities safely. The first list of “general norms” is suitable for every class, while other norms and tips should be presented in the context of specific, relevant activities. (I.e., no need to talk about microwave safety if only the oven will be used on a given day.)

General norms for every class.

- We wash our hands three times:
 - 1) when entering class
 - 2) after touching one’s mouth, nose, floor, or shoes, particularly when sick
 - 3) before eating
- Use the *mis en place* system to prep ingredients before you cook.
- Be okay with mistakes—yours and others’. Mistakes help us learn.
- A focused cook is a safe cook. If you need a break, ask for one.
- If you have a question, ask a peer before asking a teacher (look around for clues; or read the directions).
- Help to set the table before eating. (If no one asks you to do it, you should still offer.)
- Wait until everyone is served to eat.

- Thank the cook(s) before eating.
- Try it before you decide if you like it not (but know that only you can decide if you will try it).
- You don't have to like everything that you try, but you shouldn't make others feel badly if they like it. (This is known as the "don't yuck my yum rule.")
- Talk about the meal and decide what you think about it. Take the recipe home and try it again if you think it needs changing.
- Help to clean up the table and the dishes. (If no one asks you to do it, you should still offer.)

Norms for entering, moving around, and exiting the room.

- Follow adult directions for moving to your station.
- Know and quickly respond to the "quiet" signal. (This can be a clapping sound, a ringing bell, a chant, a phrase, or even a song.)
- Do not leave your station until you have been dismissed by an adult.
- Do not move your tools from your station unless you have been told to do so.
- Do not move knives from your station. Adults will do this.
- Walk calmly and quietly.
- When walking behind someone who is handling something sharp or hot, say "behind."

Norms for using "sharps" (knives, peelers, graters and scissors).

- Be patient and take turns with tools.
- 1 person at a cutting board at a time.

- Use the “claw and saw” technique for knives: tucking the fingers of the non-dominant hand under, like a “bear claw,” and using this to hold the food, while the dominant hand uses the knife in a “saw” motion, slowly cutting through the food.
- No reaching over or around someone with a knife.
- No using knives for anything but cutting.
- Don’t use knives on things that aren’t good for knives. (I.e. don’t use them to cut boxes, or scrape materials off of a cutting board using the sharp edge.)
- Move chopped food off board with a bench scraper (not the knife itself) as soon as it’s chopped to avoid a pile-up.
- Adults only should carry and pass knives.
- When not cutting, knife goes in its “home” at the top of the cutting board, horizontally.
- Use peelers with caution and supervision. (Y-shaped peelers are safest, as they can be used by the dominant hand while the non-dominant hand can hold the object in a “claw” grip.)
- Use graters with caution and supervision. (Graters that rest flat on the table, as with many models made by Microplane, are best.)
- Stop cutting or grating when your fingers are close to the sharp edge. (This is known as the “Save your fingers, not the food” rule.)

Use compost bowls or bins on hand for food-based scraps, if possible.

Norms for using heat (ovens, stoves and microwaves).

- Stand two big steps back from the heat source when something is cooking, unless a grown-up gives you permission to come closer.
- Only one student can stir a hot pot at a time.
- Don't use metal tools on non-stick pans. It can remove the surface and make the pans unsafe.
- Don't put water into a pan with oil; it can splatter.
- If something in a pan starts on fire, ask a grownup to put baking soda on it, not water. (And be sure to call for help immediately.)
- Keep tools and materials like paper towels, oven mitts, etc. away from the stove so they don't catch on fire.
- Point the handles of pots away from the edge of the stove so no one bumps into them or flips them over.
- Tie your hair back if you are working with an open flame so it doesn't catch fire.
- At school, only grownups can operate the oven. At home, never open an oven, or reach into one, without mitts to protect your hands.
- At school, only grownups can operate the microwave. At home, be careful with microwaves, especially if pulling out something liquid. Hot liquid can topple over you and burn.
- Don't put metal materials in the microwave. It can spark and catch fire.
- Keep electrical appliances away from water. A shock can hurt or kill you. Unplug tools when you're not using them to keep people safe from shock.
- If you do get hurt, tell a grown-up right away.

Norms for keeping food safe from bacteria.

- Understand that germs grow when they have a comfortable (room) temperature, moisture, carbohydrate or protein food, air to breathe, and an environment with neutral pH. (Examples: This is why acid and salt in pickles helps keep them safe, even in moisture and at room temperature, and why the cold in the refrigerator helps keep other foods like hummus safe, even with air to breathe and food to eat.) As cooks, our job is to make sure that germs don't get what they need to grow.
- Use “penguin arms” (arms at side) when not actively engaged in cooking, to avoid transferring germs from hair, mouth, other people, etc. to food.
- Wash and/or peel all produce before placing it on cutting boards.
- Don't mix up food preparation dishes (i.e. mixing bowls, cutting boards) and serving dishes (i.e. soup bowls, plates).
- Don't mix up tools used for foods served hot (i.e. meat) and foods served cold (i.e. salad).
- Don't mix up clean and dirty dishes.
- Ensure refrigerator and freezer stay cold (42F and 0F, respectively) by making sure the doors stay closed.
- Don't leave any food, raw or cooked, at room temperature for more than 2 hours.
- Use a simple diluted bleach spray to sanitize surfaces (1tbsp bleach:1 gallon water), especially after preparing handling animal products (i.e. eggs).
- Use disposable dish cloths, or wash dish cloths frequently, to prevent bacterial growth.

Norms for avoiding allergic reactions.

- Know the signs of an allergic attack. If someone seems like they're having trouble breathing, tell a teacher right away.
- If you have an allergy, make sure the teacher knows about it, and has your EpiPen nearby.
- Make sure to carry your EpiPen with you to cooking class if you are coming from another location.

Finding Learning Resources for the Kitchen Classroom: An Anti-Bias Framework

As discussed in the “Rationale,” students come to the learning space with varying types of background knowledge about food. Some may be familiar with a wide array of ingredients, dishes and food celebrities through dining out or watching food television, but may be less familiar with the tools used in a home kitchen; others may bring a wealth of knowledge from observing family members who cook at home, but may be more tentative when encountering foods valued by other cultures; etc. Thus, in addition to the tools and foods used in a cooking curricula, it is recommended that teachers assemble additional materials for the learning space that will help to build a common foundation of background knowledge regarding food. These may include but are not limited to:

- Picture books
- Cookbooks (for adults and children)
- Nonfiction books
- Food magazines (for adults and children)
- Other magazine and newspaper articles
- Videos
- Photographs and illustrations

- Imaginative play props (i.e. clothing, tools)

Below are four key questions I ask myself when choosing resources for children about food. Underpinning these questions are developmental concerns, inspired by the work of child development experts such as Erikson (1950) and Wood (2007); social justice concerns, inspired the work of anti-bias educators and critical race theorists, i.e. Derman-Sparks (1989), Bishop, R.S. (1990), and Takaki (1993); and by educators using a progressive, experiential lens, such as Dewey (1916) and Feeney (1992). These questions are:

1. *Should* my students access this resource?
2. *Can* my students access this resource?
3. Is this resource a “door” or a “mirror”? (Bishop, 1990)
4. How will this resource be used?

Below I discuss these criteria in greater detail, including tips from the aforementioned experts on best practices for selecting learning resources that convey respect for the identities and independence of children.

Should my students access this resource? In answering this question, I consider how each resource (book, magazine, video, etc.) addresses—or fails to address—the identities, choices and values that are integral for me and my community. I.e., does this resource reflect good research, a thoughtful, nuanced approach, and an accurate depiction of its subjects, or does it contain harmful stereotypes?

I also consider how each resource relates—or does not relate—to my current focus for learning. Are we focusing on nonfiction writing or fiction? Learning how food is made, or where it comes from? A pre-existing unit of study, or a question that’s just

cropped up over the lunch table today? This criteria may mean that a good book or video may nevertheless not be the *right* resource for *right now*, which can help me sift through the many options out there. Here, some advice I once received from a wise graduate advisor bears repeating: “A curriculum is not a series of ‘cute’ activities.” It is about building towards increasing mastery using a tight focus on a particular set of goals.

Can my students access this resource? No two students are alike in the way they consume information, even if they are in the same grade, or have been given the same “level” on reading assessments. Some need to “read the pictures” in a book while others devour the words. Some benefit from reading plays aloud, complete with funny voices for each character, while others shyly insist on “reading in their heads” as they silently eke out the meaning of a story. Some access resources more readily in their non-English home language than they do in class. And of course, some consume information with their eyes and ears, while others read with their fingers using Braille or access speeches via sign language. Some students retain more information after hearing audio or watching video than they do when consuming information via text, while others need to move or act out information to internalize it. Thus, there is no one perfect resource; all we can provide is a well-intentioned array of options that suit the specific students in our care.

At the same time, there are likely to be some generalizations you can make in terms of the way the students in your group access information. I.e., whether they lean more toward “learning to read” (typically thought of as grades 3 and below) or “reading to learn” (grades 3 and above), and whether they are more familiar with topics and words related to urban or rural environments given their location. This will impact whether or not the resource will be a good fit for the abilities of your group in general.

When reading cookbooks in particular, I consider task complexity alongside text complexity. A cookbook with simple vocabulary that describes complex things will require more adult support in the kitchen, as will a book describing simple things that is heavy on sophisticated vocabulary or technical jargon.

I consider, too, whether the text has been tested rigorously on and with children, as *Pretend Soup* (Katsen, 1994) and *Cooking with Children* (Feeney, 1992) both have. Or if it simply contains an adult author's well-intentioned but potentially off-base ideas about what appeals to and works for children. Sadly, some of the prettiest cookbooks I have seen are afflicted with most tragic mismatches between the pictures (which might depict or be designed to appeal to very young children) and the words and tasks (which might be pitched to a middle-school level or above). Meanwhile, some perfectly serviceable, developmentally appropriate resources can be found at garage sales or thrift stores. (I.e., Betty Crocker's *Cookbook for Boys and Girls*, published in 1967 and still considered a classic.)

When in doubt, I tend to gravitate toward adapting simple recipes I've tried and loved and truly gotten to know, based on cookbooks written by thoughtful adult professionals, testing them in my kitchen first to see if I like them. (See also Cornforth, 2016, on best practices for adapting recipes for the kitchen classroom.)

Is this resource a “window” or a “mirror”? I try to consider the balance in any given library between what Rudine Sims Bishop (1990) refers to as “windows” and “mirrors.” That is, between books that expose children to other cultures, philosophies, family structures, and varying levels of physical ability (windows), and books that reflect

their own own lived reality, providing them with a sense of recognition and belonging (mirrors).

However, this is often easier said than done. Consider this startling recent statistic: of 3,400 children's books published in 2016, tracked by the Cooperative Children's Book Center at the University of Wisconsin, just 278 were about Black people, 55 were about American Indians/First Nations people, and 166 about Latinos; just 10 of the books in the latter category were written by Latino authors themselves. This means that stories featuring children of color—all the books in all of these categories *combined*—only represented 15% of all children's books published in 2016.

Thus, books featuring White children are likely to be easier to find than their alternatives in the typical local bookstore. Yet having a primarily peachy-hued kitchen library is not, in my opinion, a viable option for American educators teaching in the 21st century. It is disrespectful to children of color, who deserve to see role models in books reflecting *their* lived realities, and it also reinforces White children's sense of themselves as "normal" and everyone else as "Other," which serves to keep White privilege in place as a social structure and White children ignorant of other ways of living (Bishop, 1990). Working actively to shift this state of affairs is a mission many educators (and librarians) take seriously (Bruce et al., n.d.).

Additionally, many other media (i.e. television shows, magazines, newspaper stories) depict the world of food, cooking, and fine dining often foreground the experiences of White people, while at the same time eliding the existence of many Black, Hispanic/Latino and Asian people actively laboring in our food system (Janmohamed,

Ho, & Ramirez, 2016). People within the food world, such as chefs and food writers, have also taken up the work in recent years of dismantling this type of White privilege.

Thus, it behooves us as educators to join these forces of anti-bias education and to take the work forward. So what can we as educators do to provide a more balanced classroom environment? Must we toss out Betty Crocker's cookbook for children out because it reflects the culturally homogenous America featured in 1950s-era advertising?

I believe we do not, but we *do* have to work to balance the scale, seeking resources that better reflect the multicultural society and 21st century food culture of America today.

Authors like Ezra Jack Keats, Grace Lin and Gary Soto—who are well-known and beloved for their depiction of African-American, Asian and Hispanic families respectively—are a good place to start when it comes to books for children.

When it comes to finding resources created by and for adults of color, or for diverse adult role models to feature in lessons, consider also looking to cookbooks, videos and other resources by these modern luminaries:

- Ferran Adrià (a Hispanic man and groundbreaking chef/scientist, formerly the chef/owner of El Bulli in Catalonia, Spain)
- Joanne Chang (a Taiwanese-American woman and chef/owner of Flour Bakery in Boston)
- Roy Choi (a Korean-American man and chef/owner of several restaurants in L.A., and author of *L.A. Son: My Life, My City, My Food*)
- Madhur Jaffrey (an Indian woman and former *New York Times* food writer)

- Masaharu Morimoto (a Japanese man and chef/owner of several restaurants throughout the U.S. and Japan)
- Yotam Ottolenghi (a Middle Eastern, Jewish man, chef/owner of several restaurants in London, and author of many cookbooks, including *Ottolenghi* and *Plenty*)
- Bryant Terry (an African-American man, currently Chef-in-Residence at the Museum of the African Diaspora in San Francisco and author of *Afro Vegan*)
- Toni Tipton-Martin (an African-American food historian and author of *The Jemima Code*)
- Marcus Samuelsson (an Ethiopian-born man raised by adoptive Swedish parents, chef/owner of Red Rooster in New York City)

Derman-Sparks (1989) and Feeney (1992) also recommend reaching out to the families of students in your care to request donations of magazines, photographs and other resources consumed in their homes, to better create a classroom that reflects students' home cultures. Asking the families of the children in your care to send in their favorite recipes and cookbooks as well is also a meaningful way to make them feel included, and to learn more yourself about cuisines with which you may be less familiar.

However, the state of affairs, in which White-centered resources are the “norm” and it is still difficult to find cookbooks featuring Black or brown children on the cover, behooves us to all drill deeper as well. As educators, we must make it a point to request that publishers, libraries and bookstores stock titles by authors hailing from more diverse backgrounds, to better inspire and reflect our diverse American student body. We must

also work harder to locate non-textual resources from a diverse array of cultures to enrich our classrooms, including toys, artwork and materials in our rooms.

To this end, Derman-Sparks (1989, p. 11-12) offers these tips on the following.

Photos. If there are photos of individuals on the walls, ensure that a wide variety of races and backgrounds are represented, particularly those matching the identities of the children in the class. Ensure also that there is a fair balance of women and men, as well as differently abled individuals depicted. Ensure that images are up-to-date in terms of how people live their daily lives, and not informed by stereotypes.

If there are families represented on the walls, ensure that many different family types are represented, including parent pairs that are male/female, male/male, and female/female; parents that share a race and those that are of different races; families that are composed of or include grandparents as primary caregivers; and families that include differently abled members.

Artwork. If there is artwork displayed (prints, sculpture, textiles), ensure that the artists' backgrounds and methods reflect the diversity of your students and the aesthetics with which they might be comfortable in their home environments.

Music. If there is music played in the classroom, it should reflect the various cultural styles of children as well as other groups in the U.S. Teaching songs for the group to sing from different cultural groups as part of community-building, or as a tie-in to a lesson, can be a particularly positive experience for all.

Toys and dramatic play materials. If there are toys that look like people (dolls, action figures), board games that depict people, or costumes that are evocative of the cultural heritage of students in the room, consider the mix of these materials as well.

Art supplies to create new materials. Students can be agents of anti-bias education by creating their own materials, reflecting their identities. Ensure that a variety of skin tones are represented among options for materials, i.e. crayons, colored pencils and paint.

How will this resource be used? Finally, I think about resources that can be used in a variety of ways, either by students independently or by me as a teacher. Some resources may be more aspirational than others in terms of the ideas, the writing or the skills to which I want to expose children, particularly books and video resources geared toward adults.

Typically, books in my library fall into the following categories; a balance of all is ideal, and the more, the merrier. (Note: all titles referenced in this section are described in greater detail in the section that follows, “Books to support this unit.”)

Independent use. Children can consume “easier” books, videos and magazines by themselves, for pleasure and for learning on their own.

Look books. Children can consume “harder” books by themselves, particularly nonfiction books pitched to older readers, by browsing texts that offer pictures, photos, maps, diagrams, captions and other sources of inspiration, even if they can’t sound out or understand every word. For example, *What the World Eats* is written on an adult level, but the pictures speak volumes.

Read-alouds/facilitated discussion materials. Grown-ups can use “harder” books (which may be independent-level books only for a small minority of readers) as read-aloud books, and present videos and other resources geared toward adults in a scaffolded way, via facilitated discussion. The adult in question may present the resource in smaller

parts, interjecting to ask questions, clarify vocabulary, or encourage students to paraphrase what they've heard in their own words.

The main purpose for facilitated discussion materials is to create a common foundation of knowledge in a classroom. Once they get the gist, children can explore these resources again afterwards with more understanding and enjoyment. For example, *Teddy the Taster* (Lowery, 1969) and *How to Make an Apple Pie and See the World* (Priceman, 1994) have relatively sophisticated vocabulary, but they offer great fodder for discussion about tasting new foods or learning about food origins, respectively, when read aloud to a group.

Mentor texts. Grown-ups can use “harder” books as “mentor” texts that can be read aloud, often multiple times, with some passages studied in-depth. The main purpose here is to inspire and teach readers to try out the same writing technique or text structure as the author. (This does not mean that every “hard” book or read-aloud book is worth using as a mentor text, but many mentor texts are worth exposing to children well before they're able to read them.)

For example, *Amelia's Notebook* (Moss, 2011) has sophisticated vocabulary and some dated cultural references that might make it difficult for younger children to decipher alone, but the format can inspire children to keep daily journals of their food adventures at school and on the road, even if they're not ready to write as effusively as Amelia.

Another example: *Gai See: What Will You See in Chinatown* (Thong, 2007) can show children how they might compose seasonal poems about their own neighborhood food markets, even if their passages are shorter and more rudimentary at first.

Videos, websites and other multimedia resources can also be used as mentor texts, particularly if students plan to present their work in the same form (i.e., if students are interested in making “how to” cooking videos to showcase their learning in the unit).

Books to Support This Unit

Creating a classroom library for students to browse, as well as collecting books to use intentionally in support of activities and lessons, is a key piece of *mis en place* that is best to accomplish before beginning this unit of study. Below is a list of suggested books to support this unit.

To support the initial creation of a small, high-quality library tied to the objectives of this unit, this section is divided into the following sections:

- Read-alouds & mentor texts (for grades 3-5)
- Cookbooks (for grades 3-5)
- Other nonfiction resources (for grades 3-5)

All books are presented in the order in which I suggest they be used within the unit.

Note: in the section entitled “Modifying This Curriculum for Different Age Groups,” you will also find:

- Resources for younger children (for grades 3 and under)
- Resources for older children (for grades 5 and above)

Read-alouds and mentor texts.

1. *Teddy the Taster*, by Lawrence F. Lowery (1969)

Teddy and his friends become curious about the way various foods taste, moving away from the extremes of “yuck” and “yum” to describe the complexities they find in

between. The book provides children with a role model for open-minded behavior when encountering the new. The protagonists are primarily White. The combination of simple and sophisticated vocabulary terms makes reading aloud the best option for presenting “Teddy” to diverse groups of readers. This story can provide a useful jumping-off point for discussing how readers should approach tasting new foods in the kitchen and classroom, ideally with an open mind.

2. *Dinner with the Highbrows: A Story about Good (or Bad) Manners*, by Kimberly Willis Holt (2014)

Bernard has been invited to dine with the Highbrows, and his mother arms him with advice on how to impress them with his table manners. Unfortunately, her advice applies to eating at home, and they’ve chosen to dine out, making some rules (like offering to do the dishes) moot. Meanwhile, Bernard’s hosts appear to believe themselves above *any* good rules for eating, causing him to question how he himself should act. The protagonists of this book are all White. This book can help to facilitate a conversation about what it means to do the right thing at the right time, how one might figure this out, and which rules for behavior the group wishes to establish and follow together to avoid awkward scenes like the ones in the book. All themes that are developmentally relevant for elementary school children (and grownups, too!).

3. *Amelia’s Notebook*, by Marissa Moss (2011)

Amelia writes (and often complains colorfully) about her everyday experiences, which often include food, whether she’s making fun of the brick-like brownies in her cafeteria or describing a scene from a diner while on the road with her family. The protagonists in this series are primarily White. This story can serve as a mentor text for

readers who are beginning to keep a journal of their eating and cooking experiences, showing them that colorful, adjective-laden writing, funny drawings and captions are all fair game when writing about food. (Also recommended: *Amelia Hits the Road*.)

4. *Everybody Cooks Rice*, by Norah Dooley (1991)

Bread and rice are two staple cuisines you are likely to find in many types of homes. In this book, a pair of Italian children visit different people in their neighborhood and find that each family is cooking a different kind of rice. The children visit families hailing from Barbados (rice and black-eyed peas), Puerto Rico (rice with turmeric), Vietnam (fried rice with peas and nuoc cham), India (biryani), China (white rice with wok-fried vegetables and tofu), Haiti (rice with peppers, chives, and red beans), then come home to their own Italian dinner of “*risi e bisi*—rice with green peas.” The illustrations in the book cast every character’s skin in a yellowish tone. This story underscores the fact that many people around the world rely on the same foundational foods to feed their families (rice, wheat, and corn being the primary staples). It can also serve as a mentor text for class books, in which every student describes a rice dish (or a dish related to another common food in the classroom) and a scene in which they might eat it with their families. It includes recipes for each dish that children can make with a grown-up’s help. See also: companion volumes by Dooley on bread, noodles and soup.

5. *Bread, Bread, Bread* by Ann Morris (1989)

The author (a former educator at Bank Street College of Education) explores the same idea above—that children around the world share the same staple food—but with a nonfiction approach. Featuring photos from around the world of children of many races and backgrounds (taken by Ken Heyman, a frequent collaborator of anthropologist

Margaret Mead) paired with easily-decodable language. A quick read, the book provides an expeditious visual trip around the world that helps students to build background knowledge about the diverse ways in which a simple dough recipe can feed the world.

6. *Gai See: What You Can See in Chinatown*, by Roseanne Thong (2007)

Readers experience the color and bustle of a market over four seasons, and are introduced to many new Chinese words along the way. The protagonists in this book are Chinese. This story can help readers to see that there are many types of markets beyond the supermarkets or corner stores with which they may be familiar, markets that can be sources of inspiration and education. It can also serve as a mentor text for student writing (narrative or poetry) following a field trip to a local market.

7. *How to Make an Apple Pie and See the World*, by Marjorie Priceman (1994)

The author seems to be inspired by Carl Sagan's quip that "If you wish to make an apple pie from scratch, you must first invent the universe." Told in the second person ("you"), this book follows characters who travel to the source of each ingredient in pie, whether it's wheat from Persia or apples from New York. The protagonists in these books, who stand in for the reader, are both White.

These stories help readers to see that a lot of work and traveling goes into the sourcing of ingredients for a single recipe. In addition to all the hard work that happens in the kitchen, the foods they enjoy daily also involve complex networks of agriculture and transportation. This can also serve as a mentor text for student investigations and presentations centering on particular foods, in which readers trace the source of foods back to a local (or faraway) source. See also: a companion volume on the U.S.A.

Cookbooks.

1. *Pretend Soup*, by Mollie Katzen (1994)

Mollie Katzen is the creative force behind the Moosewood Restaurant in Ithaca, NY as well as *The Moosewood Cookbook* (1974), her seminal vegetarian cookbook. In *Pretend Soup*, her first children's cookbook, the author co-created simple, readable recipes with teachers that she tested with many preschoolers; she later added two companion volumes for older children after similar road-testing. These books contain recipes that are culturally diverse (albeit often simplified), as well as testimonials from children from a variety of backgrounds. All of these resources include two versions of each recipe: a kid-friendly version that's easy to read and prepare, and a version with more explanation and detail for the grown-up helper assumed to be hovering in the margins. Recipes are highly adaptable or usable verbatim in classrooms.

2. *The Children's Multicultural Cookbook*, by Deanna F. Cook (2008)

Author Deanna F. Cook traveled the world to gather the anecdotes and recipes used in this globe-trotting cookbook for upper elementary school children, in which children of many skin tones, economic backgrounds and cultural backgrounds are represented in both photos and illustrations. (The handmade pasta recipe has proven to be a particular favorite with my most recent group of children.) Though not exhaustive or precisely reflective of the primary cultural minorities in America (there is no section on Korea, for example), it provides a well-researched and caring cross-section of the foodways to be found outside of the U.S.A.

3. *Cooking with Children*, by Marion Cunningham (1995)

Cunningham met celebrity chef James Beard in a cooking class when she was 50 years old, and later went on to assist him in rewriting the classic Fannie Farmer

Cookbooks for a modern audience in '79 and '90. Following many accolades and awards, Cunningham set to work on testing a curriculum for future cooks at her local community center. This book, rich with ideas and illustrations featuring children from a variety of backgrounds, is the result. While it seems to simultaneously speak to children and adults, which can be confusing at times, it offers the young cook the chance to steadily accumulate key kitchen skills and vocabulary through a carefully-chosen series of recipes. A good resource for adults looking to grow their own cooking skills, as well as those of the children in their care.

Other nonfiction resources.

1. Chop Chop Magazine

This Massachusetts-based publication employs a team of science writers and kid culinary testers to produce recipes for children of various ages, recipes that reflect America's modern-day diversity. A typical issue is as likely to feature Vietnamese lettuce wraps as it is to showcase Italian meatballs, and care has been taken to feature children of varying ages, races and ability levels preparing the food in the photos. Chop Chop also offers companion curricula for teachers (upon request) that offers in-depth unit material on dishes like ricotta (i.e., science articles delving into the coagulating properties of acids, math exercises in which readers double the recipe, and literacy activities in which readers identify cheese-related synonyms and antonyms). Content seems more appropriate for home cooks than for teachers (some recipes are far too long for most class blocks), and some materials are, as mentioned above, too wordy and complex for the age groups they purport to serve. But the magazine does invite feedback from readers on ways they can continue to improve here.

2. *“Color & Cook” (series)*, by Monica Wellington (2012)

This series of activity books is good for grounding children in food-focused activities that build relevant vocabulary skills and background knowledge in an interactive way (i.e. matching kitchen tool names to pictures in a puzzle activity). These books also guide readers through navigating and writing recipes, and may offer some students a chance to relax with puzzles and coloring sheets before or after beginning more social activities in the kitchen.

3. *What the World Eats*, by Faith D'Aluisio and Peter Menzel (2008)

This exhaustively well-researched book, produced by two globe-trotting reporters and photographers, features families and food from around the world. The main feature of the book is photos of families standing in their kitchens with a week's supply of food. With granular data that breaks down the amount of food per person per week, as well as a breakdown of the types of foods and nutrients consumed, the book allows readers to draw open-ended, data-backed comparisons between cultures. The photo series is also punctuated with many fascinating infographics that reveal the toll globalization has taken on the way the world eats. Taken together, these photos and graphs can prompt some surprisingly deep reflections on the way we eat now, from the role of privilege to the consumption of animal protein.

4. *Let's Eat! What Children Eat Around the World*, by Beatrice Hollyer (2004)

This book, published in association with Oxfam, features in-depth features on five children from around the world: Thembe in South Africa, Luis in Mexico, Kamalotas in Thailand, Jordan in France, and Yamini in India. Each section features photos of children engaging in everyday food preparation and eating tasks, as well as “special days” that

relate to each child's food culture: for example, Thembe attends a wedding in South Africa, and Jordan goes mushrooming in France. Recipes for some of the foods in the book, which require adult assistance, are included. Chef Jamie Oliver, who wrote the introduction, also contributes his own recipe for chocolate cookies.

Suggested Accommodations for Students with Special Needs

Some parts of the physical environment, as well as some aspects of this curriculum, will need to be modified for students with special needs. What follows is a short list of issues to consider as you build an appropriate learning environment and experience for the children in your care.

As you consider each element of this curriculum, consider also these helpful links related to the concept of Universal Design, which designers of experiences (i.e. classes), spaces (i.e. kitchens) and tools (i.e. spoons) use to determine whether or not their product is accessible to all (see: National Center on Universal Design for Learning, n.d.).

Universal Design resources.

- National Center on Universal Design for Learning:
<http://www.udlcenter.org/aboutudl/udlguidelines>
- SafeScore Kitchen Design Checklist: <https://safescore.org/checklists/kitchens>

Creating a kitchen classroom.

- For children with fine motor difficulties: select tools that are OXO Brand, designed according to principles of Universal Design for a range of abilities.
- For children with mobility issues: ensure that surfaces are placed at a height that can accommodate any assistive devices, i.e. wheelchairs.

- For children with reading difficulties or working memory issues: include visual vocabulary supports for the tools, i.e. a poster size chart that has a photo of each size of measuring cup, in order from biggest to smallest, with the names of each underneath. Consider creating other visual labels or posters to help students identify other tools: spatulas, mixing bowls, etc. Create visual recipes with photos as well as words, showing how the ingredients should be handled.
- For children who have sensory integration issues (i.e. those on the autism spectrum), consider all the sensory experiences are common in cooking, and ways to mitigate their intensity:
 - Auditory (hearing): verbal communication in the kitchen, cooking sounds, background noise of machines
 - Tactile (touch): tools, ingredients, temperature
 - Olfactory (smell): food, soap, water, garbage smells
 - Taste: closely connected to touch and smell
 - Proprioceptive (sensory experiences felt within the body, i.e. pressure on joints or feet): standing, stirring, the pressure of a knife on an object, hunger/thirst/nausea prompted by other senses
- Additionally, be aware that some students with sensory integration issues may under-select (be less aware of sensation) or over-select (seek out strong experiences with that sensation), i.e. failing to hear verbal directions (under-selecting for auditory information) or smelling and touching every ingredient multiple times (over-selecting for olfactory or tactile feedback). Consider ways to

allow students to meet these sensory needs without disrupting lessons (see: Davis, K. & Dubie, M., n.d.).

Finding resources.

- For students who are English language learners and/or newly-arrived immigrants, consider including role models or proverbs from their home countries or home languages, if possible, in your collection of materials or on the walls.
- For students with physical disabilities, consider featuring (in your decor or in your discussions) adult role models, including people in wheelchairs and other assistive devices, engaging in cooking activities (Derman-Sparks, 1989). I.e., Christine Hà (who is blind) and Colt Munchoff (who has brain injuries that have limited his use of the left side of his body).
- For students with reading difficulties, consider adding picture rich books as well as text-heavy books. Encourage them to “read the pictures” as well as the text to gain more information about the topic.
- For students with other expressive language difficulties (i.e. reading, hearing or seeing difficulties), add texts in Braille, audio-books and video-equipped tablets as necessary to your library. (See also: Derman-Sparks, 1989.)

Language-based activities (speaking, listening, reading, writing).

- Create thoughtful, heterogeneous pairings for partnered activities, so that students who can access more complex speaking/listening/reading/writing content can assist students who may need help accessing this level of content.
- For students who are English language learners, or have difficulties with expressive language (i.e. slow verbal processing), consider creating sentence

starters so that they can more easily compose a written or verbal response to oral prompts, which they can read or have read aloud by a teacher.

- For students who are English language learners, allow students to participate in cooking in their home language if possible.
- For students who are struggling readers, or have issues with receptive language (i.e. dyslexia), create multiple versions of a text for different reading levels. Pair students with the texts that match their level of ability.
- For students with expressive language difficulties or fine motor difficulties, provide a variety of materials for each writing activity (i.e. fat markers as well as skinny pencils) so that students are more likely to experience success with one.

Cooking activities.

- Thoughtfully assign student jobs based on student strengths, allowing students to scaffold each other's learning. Roles may include The Recipe Reader (if reading is a strength), the Ingredients Manager (if executive functioning is a strength), multiple Measurers, multiple Mixers, etc.
- Cooking and eating experiences can be particularly challenging for students with sensory integration issues. For these students, teachers can:
 - Have a cooking tool exploration before you begin the unit. Bring out all the cooking tools and let students hold them and share their experiences with any of the tools. Ask questions like, "Have you ever seen one of these before? What do you think this is used for? Why do people need this tool?"

- Preview the smells or textures of ingredients before the actual cooking experience.
- Help children determine which ingredients they want to work with, and which are too overwhelming (e.g. I want to pour the vanilla but I don't want to measure the cinnamon).
- Offer options for children who are uncomfortable touching the food direction—by providing gloves, or the option to perform roles that do not involve direct contact with food (i.e. Recipe Reader).
- For students with varied expressive and receptive language issues, create a variety of recipes, in formats that make use of student strengths. More than one can be used per activity. (A. Jagord, personal communication, April 15, 2017).
 - Text only
 - Simplified text
 - Text and picture
 - Picture only
 - Verbal directions only
 - Checklist recipe (students check off each step as they go)
 - Large visual recipe (i.e. on a SmartBoard)
- For students with working memory difficulties, create a song to help them students remember and move through the steps of common procedures (i.e. washing hands).
- For students with fine motor control difficulties:

- Provide a variety of materials for each cooking activity (i.e. small spoons as well as large spatulas for stirring) so that students are more likely to experience success with the material that best suits them.
- Consider attaching tools to inexpensive gloves with food-safe adhesive so that they stay in students' hands. (C. Dilello, personal communication, April 14, 2017).

Activities and Lesson Plans

The activities and lessons that follow are designed to help students deepen their connections to each other; to deepen their understandings of food; and to connect these understandings to the strategies, skills, processes, and products that are related to their ongoing development as learners in literacy, math, science and social studies.

While not every setting requires that their activities and lesson plans be aligned with the Common Core State Standards (CCSS) in literacy and math, or with state standards in science and social studies, I have used these frameworks to inform my learning objectives because so many educators are obligated to do so in their own lesson planning. This is particularly true in public schools adhering to the CCSS and their own state standards. These institutions are largely responsible for serving our most vulnerable students—the ones who are most in need of this food-focused curriculum. It follows that if this curriculum exists to meet the needs of our most vulnerable students, then the learning objectives should be aligned with those most commonly used already in the settings

where they are likely to learn, and to support the work of the educators already endeavoring to make their lives better, in so many ways.

In this curriculum, I have elected to use Grade 3 standards for all subjects to inform and justify activities and lesson objectives, and include the relevant wording of these standards at the start of each major section for the reader's reference. As I anticipate students engaging in the work of this upper-elementary school curriculum will either be in third grade themselves, or in mixed-age settings including third graders as their youngest constituents (i.e. in after school programs), the Grade 3 standards represent a kind of common denominator. They are in most cases similar to the corresponding standards for the upper grades, differing more in complexity than in content, so I encourage educators to explore the corresponding Grade 4 and Grade 5 standards if their students are more well-suited to them. Similarly, I encourage educators to explore the corresponding standards for earlier grades if their students appear less developmentally ready for the Grade 3 learning objectives outlined here.

The Common Core State Standards for literacy and math can be found at <http://www.corestandards.org> (National Governor's Association, 2010). Please consult your home state's education websites for detailed descriptions of their respective science and social studies standards.

Please note that this section, "Activities and Lesson Plans," contains the following subsections:

1. Community building activities.
2. Early immersion activities.
5. Primary recipe investigation.

6. Investigation extensions.

Community Building Activities

As a child who attended six different schools from kindergarten to high school, in two different states, I remember feeling frequently preoccupied with the dynamics of inclusion and exclusion in the lunchroom, to the detriment of my performance in the classroom. Anyone who has stood at the edge of a crowded and unfamiliar cafeteria, wondering where they will be welcome to sit (if anywhere) knows how anxious we can feel at the prospect of entering a new community and sharing our meals with a new group of people.

As mentioned previously, children need to feel emotionally and physically safe in order to learn (Association for Supervision and Curriculum Development [ASCD], 2011.) Teachers who engage in Emotionally Responsive Practice (ERP), a body of methodologies practiced and refined in significant ways at Bank Street, make it a goal to proactively address this dynamic by creating regular opportunities for students to build community in the classroom (“Emotionally Responsive Practice at Bank Street College of Education,” n.d.).

Creating a safe environment is especially relevant for a food curriculum, which is designed not only for classroom settings (in which students may be new to each other at the beginning of the year) but for after-school and off-campus settings (in which students may have no prior experience with one another, and may be disparate in age and background).

The community building exercises contained herein are designed to make each student feel seen, heard, known--and therefore, safe enough to learn and take risks.

Ideally, every session would kick off with one of these activities. The activities are primarily adapted for use in a food-focused curriculum, based on the excellent activities in Melissa Correa-Connolly's book *99 Activities and Greetings* (2004), published by the Center for Responsive Schools. (The CRS is another recommended resource for finding other ideas and ways to make students feel safe in the classroom.)

The activities in this section are not intended to be used in precise chronological order; instead, like the items on a menu, they are intended to be paired thoughtfully by the "chef" (you, the educator), with other activities and lesson plans from this section. These activities can be seen as "appetizers," "palate cleansers" or "dessert"—that is, they may provide opportunities to introduce the topic of the lesson (and pre-assess the students' background knowledge), provide a movement or discussion break mid-session, or bring the session to a close via a movement-based assessment or reflection, depending on how the "chef" decides to use them.

For example, if the primary activity (the "main course") you have planned is an activity in which students will be baking bread, you may use a game like "Commonalities" to kick off the session, allowing students to share which breads they eat at home. You might use "Did You Know?" to prompt them to share fun facts about the science of baking while it is in the oven. Or you can use "In Search of a Noun" to check students' understandings of what they learned at the end.

These activities are aligned with Common Core expectations regarding Speaking & Listening (National Governors Association, 2010). These more holistic standards can often be overlooked given the importance of teaching to the literacy and math standards,

but are no less important given our duty as educators to help children gain socioemotional skills as well as academic ones.

These standards, as they relate to children aged 8+, include the following requirements for students:

Common Core: speaking & listening standards.

- Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners... building on others' ideas and expressing their own clearly. (CCSS.ELA-LITERACY.SL.3.1)
- Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). (CCSS.ELA-LITERACY.SL.3.1.B)
- Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. (CCSS.ELA-LITERACY.SL.3.1.C)
- Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (CCSS.ELA-LITERACY.SL.3.3)

Activities.

Cookie Jar.

A familiar & funny food-related chant that helps kids learn each other's names.

Format:

- Leader: “Who stole the cookie from the cookie jar?”
- Group: “Student 1 stole the cookie from the cookie jar!”
- Student 1: “Who, me?”
- Group: “Yes, you!”
- Student 1: “Couldn’t be!”
- Group: “Then who?”
- Student 1: “Student 2 stole the cookie from the cookie jar!”
- Student 2: “Who, me?” etc.

Notes:

- Teachers can be the leader, can ask for volunteers, or can ask a student who may be in need of this role.
- Teachers should determine how students will choose the next person & how the group will keep track (i.e. students name the student on their right or left, named students sit down).
- The goal is to name all students and teachers in the room.
- Later on, students can brainstorm different food dishes that fit the song’s pattern. (I.e., “Who stole the pickles from the pickle jar?”)

I’ve Never...

Students share something they’ve never done, but would like to do. A helpful icebreaker, it also provides a useful snapshot of students’ prior experiences, expectations

and hopes. It also places each student (and the teacher, if he/she chooses to participate) in the same role: that of a beginner at something.

Format:

- Teachers or leaders choose a category, related to the content that will be studied.
- Students brainstorm things they've never done related to this content area (Food variations: *I've never eaten...but I'd like to!* or *I've never cooked...but I'd like to!*)
- Students mingle at random, stopping to talk with the nearest partner at the sound of a chime or the stopping of music.
- Students decide who will share first (rock/paper/scissors, oldest/youngest, tallest/shortest).
- After both students have shared, they can respond:
 - "I've never done that either!"
 - "I love doing that. Maybe I could tell you about it."
- Students reflect on the activity, naming moments of connection & things that surprised them.

Notes:

- Teachers may choose to write the sentence format down to help students respond.
- Teachers may also choose to write down options or sentence starters for polite responses.
- Students may benefit from being able to write their sentences on a white board before beginning, to help themselves remember their answers (or practice content-related vocabulary and spelling).

- For groups learning names, students may be asked to incorporate an introduction into their script. I.e. “My name is Ryan, and I’ve never made lasagna!”
- Mingling at random should look the way it sounds: random. You may choose to take this first mingling activity as an opportunity to discuss expectations with children in terms of matching up with new partners respectfully–i.e., not shouting “Yes!” or grimacing in response to being partnered with a particular person; not veering away from one nearby person at the chime, only to choose another more preferred partner across the room; and not choosing the same partner more than once during a mingling activity. Consider discussing these norms this now if your group has not yet done a formally partnered/group activity.

Commonalities.

A game (and useful formative assessment) in which students ask and answer open-questions in both written and verbal form, then come together in the end to identify points of commonality.

Format:

- Teachers write a question for each child on a slip of paper (or for partnerships or groups, to decrease prep & activity time).
- Students draw questions at random from a container & go around gathering answers on a sheet. (Name--Answer, i.e. Ryan--Loves eggs & toast)
 - Food-related questions could include:
 - What’s your favorite food to eat for breakfast?
 - What’s your favorite food to eat for lunch at school?

- What's your favorite food to eat for dinner with your family?
 - What's your favorite holiday food and why?
 - What do you like to eat on your birthday and why?
 - What is one food you know how to make by yourself?
 - What is one food you really want to learn how to make by yourself?
 - What do you want to be when you grow up? (It's okay to say, "I don't know.")
 - Who is the best cook in your family?
- When all students have tabulated their results (this may take a while!), they can come together again in a circle, and volunteer to share noticings about commonalities they found.
 - Results can be tabulated on a graph for older kids.

Notes:

- Expectations can be set around respectful questioning and answering, not running around the room at a manic pace.
- Students might brainstorm ways of thanking their respondents for their time or responding positively to answers, whether or not they agree, i.e. "I like chocolate, too!" or "Wow, I don't know how to do that, you'll have to teach me!"

Just Like Me!

A variation on the above, in which students prepare statements about themselves, then respond to others' interests. This can be based on the answers to specific questions, or can be more open-ended (i.e. "Tell us one thing you like about yourself.") A helpful, movement-based activity and assessment for groups that are more extroverted or in need of more physical stimulation (remember that most 8-10 year olds are in desperate need of this!).

Format:

- Students brainstorm statements about themselves.
- Students form a circle, seated in chairs (for easier movement).
- As each student shares their answer, other students who share their qualities can stand up and say, "Just like *me!*"

Notes:

- Students should try a practice round so they understand behavior expectations around how to stand up and sit down safely, and what volume is appropriate for your setting.
- This can be used as an initial icebreaker, or as a way to reflect on shared experiences after an activity. I.e. -- students can write statements about what they learned or noticed at the end of a lesson, using this game to share out.

Can You Guess?

Answers from above can be used in this game, in which facts about individual students are read aloud by the teacher (or a designated student leader) without identifying the student. Each student has a turn to guess.

Format:

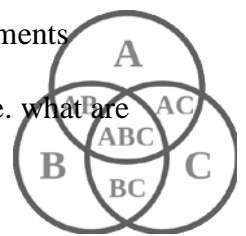
- If student A reported loving fried eggs for breakfast, the leader might ask Student B, “Which student likes fried eggs for breakfast?”
- Student B gets two guesses before Student A can declare, “That’s me!”
- The game then moves on to the next guesser.

Getting to Know You.

Another variation on the above, focusing on visual representation and information synthesis rather than memory. A good fit for introverted students or groups.

Format:

- Students use the information generated in Commonalities (or new statements written for this activity) to write unique answers to shared questions (i.e. what are your top 3 favorite foods?).
- They get together in partnerships or groups to create Venn diagrams showing qualities unique to each student, and qualities shared by both.
- Results can be shared out verbally or via a silent gallery walk with Post-It notes for observers to share noticings.



I Like Everything.

Another survey game, but with a yes/no format rather than an open-ended question format.

Format:

- Each student (or partnership or group) creates a yes/no survey question in the format of “Do you like _____” or “Can you _____.” (Examples of food variations: Do you like chocolate? Can you scramble an egg?)
- They circulate around the room tallying up the yeses and nos.
- Results can be shared out verbally or tabulated on a chart.

Notes:

- Expectations can be set around respectful questioning and answering, not running around the room at a manic pace.
- Students might brainstorm ways of thanking their respondents for their time or responding positively to answers, whether or not they agree, i.e. “I like chocolate, too!” or “Wow, I don’t know how to do that, you’ll have to teach me!”

If I Were...

A game that involves imagination and symbolic thought as a way of describing oneself and thinking about others. It also provides a way to practice a compound sentence structure and content-related vocabulary. Students are asked to answer the question, “If I were a _____, I’d be a _____ because _____.”

Format:

- The teacher or leader chooses the category (animals, food, plants, or other objects of study), then models the first answer. I.e. “If I were an animal, I’d be a dolphin, because I love to swim.” (Food variations: *If I were an ice cream flavor, I’d be _____ or If I were a kitchen tool, I’d be _____.*)
- Another adult or leader can model an appropriate, positive response. (I.e. “I love to swim, too!” or “Dolphins are really cool animals.”)
- Students then brainstorm their own answers.
- The game begins when all students are ready and have a thumbs up to show they have an answer.
- Student A shares his/her answer.
- Student B offers a respectful comment in response to that.
- Student A asks, “What would you be?”
- Student B answers and the game moves on.

Notes:

- Teachers may choose to write the sentence format down to help students respond.
- Teachers may also choose to write down options or sentence starters for polite responses, in addition to modeling them.
- Students may benefit from being able to write their sentences on a white board before beginning, to help themselves remember their answers (or practice content-related vocabulary and spelling).

- Teachers should remind students that they cannot share their own answers until they've responded to the student beforehand.

Milling to Music.

This is an effective icebreaker, a way to deepen relationships, or a way to include a share at the end of a lesson that helps students wake up and listen carefully to one another. A particularly good activity to use during stressful times of year, following troubling current events that may be impacting students, or even when individual members of the group appear to have had a difficult day. It allows students to move around joyfully, to be heard, and to reflect on their day before moving forward.

Format:

- Students dance and move around to music for 30 seconds.
- When it stops, they find the nearest partner.
- Teachers call out or write down an open-ended question for the partnerships to discuss (i.e. "What did you learn about the environment today?").
- Students can take turns answering the question and paraphrasing each other's responses. Example:
 - Student A: What did you learn about the environment during this lesson?
 - Student B: I learned that animals can sometimes be hurt by the litter we leave in the park, so I need to be more careful when I'm having a snack in Central Park next time.
 - Student A: It sounds like you're thinking about what you can do personally to help the environment.

- Student B: Yes, I am. What did you learn about the environment during this lesson?
- Teachers can also provide a variety of questions for this activity on 3x5 cards, and students can switch questions after they interact.

Notes:

- After being exposed to an array of musical options, students can be prompted to vote on their favorite genres, or provide their own suggestions for the musical playlist, so that the music played reflects their identities as well as those of the teachers.
- That said, I have found that suggestions for wordless music, i.e. jazz, classical or instrumental pop covers, are easier to address and more conducive to mingling and talking than specific requests for songs, particularly those with potentially problematic lyrics.
- Students can be prompted to brainstorm future questions for this activity.
- Teachers should review expectations for sharing and responding. They may need to explicitly teach how to paraphrase an answer, or write a sentence starter, i.e.:
“Ah, so you [re-state what the partner did or will do].”
- Variations appropriate for a mixed-age after school group:
 - What kind of music is your favorite?
 - What did you eat or make this weekend?
 - What are you looking forward to doing next weekend?
 - What did you do at snack time today?

- How did you spend your lunchtime today?
- What was your favorite part of today?
- What was the most challenging part of today?
- What kind of homework do you have tonight?
- How do you feel about [major current event, if this is what students are already responding to or talking about]?

Take Sides.

A useful way for teachers to assess students' responses to a specific issue, or personal preferences, along a continuum (whether or not it lends itself to a binary for/against response), either before or after discussing it, using movement.

Format:

- Teachers pose an issue at hand around which students are expected to have some preference. (I.e. "Should we have chocolate milk at school? Yes, no, maybe?")
- Students brainstorm their responses.
- Students show their responses to various questions by moving their bodies to either side of the room. Example: "If you think we should have chocolate milk at school, move to the right. If not, move to the left. If you're not sure, stay in the middle." (Students move accordingly.)

Notes:

- Teachers should create the expectation that students can acknowledge opposing preferences while not putting others' down.

- Teachers can create a series of questions using chart paper or SmartBoard slides to extend this activity.
- Food-related variations:
 - This activity vs. that activity (baking vs. sauteing, cooking vs. writing)
 - This type of expression vs. that type (writing my thoughts vs. sharing my thoughts out loud, writing vs. drawing)
 - This work style vs. that work style (working in a group vs. working with a partner, writing before I share my thoughts vs. sharing my thoughts with a partner before I write)
 - This food vs. that food (cake vs. pie, red sauce vs. pesto)
 - This flavor vs. that flavor (salty, spicy, sweet...)
 - This texture vs. that texture (crunchy vs. chewy)
 - This meal vs. that meal (i.e. breakfast vs. dinner, dinner vs. dessert)
 - This technique vs. that technique (chopping vs. blending)

In Search of a Noun.

Akin to the game Twenty Questions. A good way to assess students' prior knowledge about a noun (and to teach into the meaning of *noun*), in a way that also engages their curiosity and sense of fun. Ideally, the noun should relate to something used or explored in the previous activity, prompting both teachers and students to review what they know about it.

Format:

- Teachers or students can brainstorm nouns related to the class community. (Food variations: names of dishes, kitchen tools.)
- One student is chosen as the guesser, and leaves the room, while the noun is revealed to the group (either by teacher choice, or by drawing student-generated options out of the proverbial hat).
- The guesser returns, and can ask three who/when/where/why questions. (I.e.: *When might you use this? Why do you use it? Who uses it?*)
- Students who want to answer can raise their hands, and the guesser can call on them.
- After asking three questions, the guesser gets two chances to guess the word.
- If he/she doesn't get it, he/she can call on someone to say the noun.
- Another student is chosen (i.e. by drawing names out of a hat) to continue the game.

Notes:

- Teachers may wish to provide sentence starters with who/what/where/why/when questions for students to ask.
- Teachers may take notes on the way the group describes a noun, and use these kid-friendly descriptions later on when describing the same object (i.e. on a visual in the classroom).

Listen to This.

A useful way to share facts about a content area—one that does not involve lecturing to a whole class. These can be facts related to the activity or recipe to be introduced later on in the lesson, or can provide a way to deepen students' understanding of something involved in the lesson afterwards.

Format:

- Students receive facts handed out on 3x5 cards. These can be generated by a teacher or students, about the class community or the content being learned. (I.e., little-known talents of students, facts about bread.)
- Students quietly read their first card, then mill around the room.
- They find a partner at the chime and decide who will go first. Example
 - Student A: “Listen to this. Did you know that *yeast needs warm water to grow?*”
 - Student B: “No, I didn’t know that *yeast needs warm water to grow*, thank you for sharing!” or “Yes, I did know that *yeast needs warm water to grow*, very cool!” Did you know that *yeast is a fungi closely related to mushrooms?*”
 - Student A: “No, I didn’t know that *yeast is a fungi closely related to mushrooms*, thank you for sharing!” or “Yes, I did know that *yeast is a fungi closely related to mushrooms*, very cool!”

Notes:

- Teachers and students should determine a shared system for determining who goes first (i.e. rock/paper/scissors).

- Teachers may need to provide sentence starters to remind students about the format for sharing and responding.
- Teachers should remind students that the turn is not over until both partners have responded.

Match-Up.

A fun way to assess students, before or after a lesson, when chronology, sequencing or proper procedure is important to the lesson.

Format:

- Students (in groups or partnerships) are given strips with steps in a sequence. (This can be done with the whole class, or in smaller groups, depending on how many steps or parts of the sequence are involved.)
- Students have to work together to figure out how the steps should be assembled.
- Strongly suggested, particularly for groups that are new to cooking: ask students to organize teaspoons, tablespoons and measuring cups (with all of their attendant fractions, i.e. $\frac{1}{4}$, $\frac{1}{2}$) in a line, from biggest to smallest. Invite mathematical discussion about how the measurements correspond to their proportional relationships (i.e. “How many $\frac{1}{4}$ s of a cup does it take to make $\frac{1}{2}$ a cup? A whole 1 cup?). Invite students to create a poster with pictures of each measurement for future reference.
- Another food variation: organize steps in a recipe, either before or after trying the recipe, to help students to preview or review the recipe as an assessment

Early Immersion Activities

This section marks the beginning of the formal curriculum—the main course. All activities in this section are classroom-based, but are designed to set the stage for more meaningful, productive and safe learning once they enter the kitchen in the next section. Activities take the form of lesson plans, with lesson objectives that are, whenever possible, aligned with the Common Core standards (which are referenced by number next to the objective with which they are aligned).

While activities in the previous section might kick off these activities, in the space of ten or fifteen minutes, these lesson plans are designed to initiate activities that may unfold over the course of forty-five minutes, or even across the span of a few days.

Each activity includes a short introduction and/or rationale, with some precautionary notes for teachers trying the activity for the first time. Then follows a list of “ingredients” (materials) and instructions for carrying out the activity. The description of each activity concludes with tips for ways that teachers can use the information gathered to inform future instruction. (Further discussion of these activities can be found in “Findings.”)

Suggested read-alouds are also included in this sequence, appearing *before* the activities to which they most closely relate. I provide brief descriptions and suggestions for their use, but without specific objectives or related literacy activities—leaving room for the reader to determine his/her own purposes for these texts as well, as they are versatile. These read-alouds can take place at different times of the day (i.e. during the designated read-aloud time or literacy block of a typical school day), or integrated into lessons in an

interdisciplinary way. They may help to build students' vocabularies, provide background knowledge of content or vocabulary, or simply initiate a good conversation relevant to an upcoming topic. I.e., *Teddy the Taster* (1969) may introduce the language of sweet, sour, etc. in lieu of labeling food "good" or "bad," inviting students to consider their own vocabularies, food knowledge, language choice and food-based biases..

As with the previous section, activities in this "early immersion" section are designed to provide students with some shared common ground as to the community and the content they will work with throughout the unit. Activities in this section further initiate and deepen connections between community members (teachers and students), creating additional opportunities to get to know one another beyond the initial greetings and activities of the day. They are also designed to facilitate the co-creation of community norms that underscore the importance of mutual respect.

Additionally, these activities are designed to initiate and deepen connections between students and food-related concepts & content. They set the stage for students work with food in an informed, reflective and interdisciplinary way, by preparing them to draw on ideas and vocabulary from many disciplines.

Finally, the activities in this section are designed to function as informal, formative assessments: that is, they should allow teachers to surface and better understand the connections students are making between themselves and the content, and to use their observations to plan and navigate subsequent sections of the curriculum. As such, the activities in this section are designed to feature a range of modes of expression, to allow students with different ways of articulating their knowledge (i.e. through writing,

art, conversation, reflection, and action) to reveal their respective strengths and areas for growth.

These activities are aligned with a range of basic literacy skills listed in the Common Core, in addition to the Speaking & Listening Standards mentioned in the previous section (National Governors Association, 2010). They are also aligned with NY State Standards in science and social studies, which may be relevant to educators working in other states as well (NYS.gov., 2017).

These standards, as they relate to children aged 8+, include the following requirements and areas of for students:

Common Core: speaking & listening standards.

- Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners... building on others' ideas and expressing their own clearly. (CCSS.ELA-LITERACY.SL.3.1)
- Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). (CCSS.ELA-LITERACY.SL.3.1.B)
- Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. (CCSS.ELA-LITERACY.SL.3.1.C)
- Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (CCSS.ELA-LITERACY.SL.3.3)

Common Core: writing standards.

- Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

(CCSS.ELA-LITERACY.W.3.8)

Common Core: reading standards.

- Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (CCSS.ELA-LITERACY.RI.3.1)
- Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (CCSS.ELA-LITERACY.RI.3.3)
- Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area. (CCSS.ELA-LITERACY.RI.3.4)
- Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur). (CCSS.ELA-LITERACY.RI.3.7)

Common Core: Language standards.

- Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies. (CCSS.ELA-LITERACY.L.3.4)
- Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and

temporal relationships (e.g., After dinner that night we went looking for them).
(CCSS.ELA-LITERACY.L.3.6)

New York State standards.

In New York State, where this curriculum was written, educators must work to align content with science and social studies standards, as well as federal literacy and math standards. For the reader's convenience, I have provided the relevant state standards for NY (NYS.gov, 2017), so that educators may use these as a basis for comparison or justification *vis a vis* the local standards guiding their selection and adaptation of curricula.

Science: process skills.

- Ask "why" questions in attempts to seek greater understanding concerning objects and events they have observed and heard about. (S1.1)
- Observe and discuss objects and events and record observations. (S1.1a)
- Articulate appropriate questions based on observations. (S1.1b)

Science: major understandings.

- Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.
(1.2a)
- All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.
(5.1a)

Activities.

Solicit & share learning goals via an interactive letter.

For many children, reading a “morning message” is part of their daily routine, particularly if they are members of a Responsive Classroom (Responsive Classroom, n.d.). Teachers typically use the message to tell students important information about the day or upcoming activity (i.e., “Recess will be inside today, since it’s snowing”), and/or to prompt their recollection of important information that will be used in a key activity (“Do you remember our experience visiting the dinosaurs at the Natural History Museum?”).

This iteration of the morning message is interactive, more dialogue than monologue, because it provides a question for students to answer, and space for them to answer it. I have found that it is a good way to engage students who may be shy initially on the first day, to continuously engage a group that is more introverted generally, or to ensure that all voices are heard (not just the eager hand-raisers), when there is an important issue or decision to discuss.

Learning objectives.

- Students will use an interactive letter to share ideas in both writing, and later, verbally. (CCSS.ELA-LITERACY.SL.3.1)
- Students will engage in discussion of the information in the letter, while waiting their turn to talk and to ask questions. (CCSS.ELA-LITERACY.SL.3.1.B)

Ingredients.

- A space for the letter (chart paper or Smartboard)

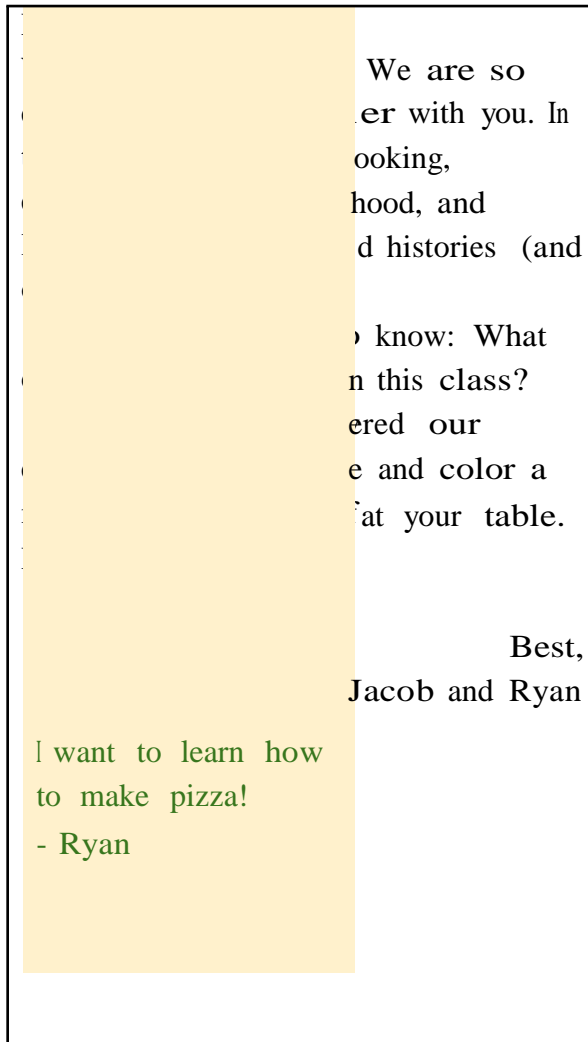
- Sticky notes and markers for kids to write responses to the letter
- Optional: nametags for children to wear if this is their first gathering together
- Optional: an object to pass around as students share out (also known as a “talking piece”), to encourage respectful listening

Instructions.

Before the activity:

- This activity typically works best when students are re-entering the room from somewhere, as teachers will have time to write it and put it up somewhere noticeable. So, find a time to write when it is quiet and kids are out of the room.
- Placing sticky notes and writing implements at tables can help to mitigate issues of crowding around the letter, and allow students to write with more privacy, then stick their answers to the letter when finished. (Students should, however, be encouraged to sign their names so that teachers can follow up on any answers that come up and ensure everyone has given an answer.) So, it is recommended that you place sticky notes on tables before this activity as well.
- After you pre-write the letter, place it in the gathering area for the room. Sign it with the name of the teacher(s), and any other adults who will be assisting with the lesson.
- Write an example response on a sticky note, or the letter, and place it on the letter to give students a visual cue to respond in kind.

Example letter



During the activity:

- Tell students verbally to visit the letter, read what it says, and respond to the question.
- Remind students to write names on their responses.
- After all students have provided their responses, teachers can gather the group together in a circle around the letter.
- A teacher or student volunteer can read it aloud, or teachers can ask students to raise their hands, give their names, and read their own responses. (Example: I.e.

“My name is Ryan, and I’m really hoping to learn how to make pizza in this class.” Or, “My name is Jacob, and I’m really hoping to learn more about what food writers do.”)

- Teachers can also share their answers if applicable.
- Teachers can set a tone for respectful listening by reminding students not to interrupt each other during the first go-around. Having a “talking piece” (i.e. a stuffed animal, or even something silly, like a stapler) that moves with each speaker can serve as a visual reminder of which student has the floor.
- After all responses have been read, students can ask a question or share a comment about other students’ responses.
- If there are no questions, students can be prompted to talk to one another as partners by doing a quick turn & talk in response to a followup question.
Example: What is one thing you love about food or cooking? Teachers can circulate and listen in to responses.

After the activity:

- Teachers should save the sticky-notes and confer to determine how future lessons can be adapted based on student responses. I.e., if many students are interested in making desserts, but desserts are not part of the planned sequence of recipes—it might be time to start researching souffles!

Begin & decorate a class journal.

In this curriculum, students will engage in many activities using worksheets and notebook paper. I have found it helpful to keep these organized inside a ½” plastic 3-ring binder, into which students could put every (hole-punched) written activity and recipe. The result then becomes a de facto cookbook, with interesting essays and tasting notes particular to each child, for families to refer to after the course.

In this activity, students take ownership over the journal by creating a collage for the cover, using a variety of art materials (from which they can choose). These can include food magazines, coloring books and a variety of art supplies, from big markers to slim colored pencils. (For recommendations on selecting an array of materials that students can access equally, please see previous section, entitled “Mis en place.”) Students can then engage in an end-of-activity group share about their creations.

Teachers can use this activity as an observational formative assessment, as it provides a window into the following:

- How students work with tools, i.e., their ability to hold and control small implements, such as pencils and scissors (this can inform your planning for future assignments involving longform writing, typing reflections and recipes, and/or handling kitchen tools requiring fine motor control, such as vegetable peelers and child-safe knives).
- How students work with text (this can inform your planning for future student interactions with recipes and cookbooks.)
- How students work with open-ended tasks in terms of organizing their attention and time (this can inform your planning around the length of the kitchen-based

projects you will choose for this group, and about how much time is needed for movement breaks vs. hands-on, focused work.)

Because this activity involves little adult intervention or direction once it has begun, it offers the opportunity for you to start your own notebook, with observations on each child. (For more information and ideas on using observations as formative assessments, see *Observing and Recording the Behavior of Young Children*, by Cohen, Stern, Balaban & Gropper, 2008.)

At the same time, some students with special needs may require your assistance from the outset. (For suggestions on ways to tailor this activity, and others in the unit, for students with special needs, please see section entitled “Suggested accommodations for students with special needs.”)

Learning objectives.

- Students will express their ideas and build on others’ by discussing their collages in a group setting. (CCSS.ELA-LITERACY.SL.3.1)
- Students will engage in discussion of their own collages and in others’ collages, while waiting their turn to talk and to ask questions. (CCSS.ELA-LITERACY.SL.3.1.B)

Ingredients.

- 8 x 11 blank paper
- Binders for each student’s journal (½” or 1” thickness works well)
- Adhesive labels for binder spines (so each child can write his/her name)

- Food and/or lifestyle magazines (be sure to remove any materials inappropriate for children beforehand, i.e. liquor ads)
- Stickers or stamps featuring food items
- Food-focused coloring pages (many printable pages can be found via Google Image Search)
- Markers or colored pencils
- Scissors
- Glue sticks

Instructions.

Before the activity:

- Decide ahead of time how long you will allot for this activity, based on what is developmentally appropriate for your age group. (Note: For my mixed-age group of 8-10 year olds, 15 minutes was not long enough for many, while most were done within 45 minutes, working over 2 sessions.)
- Distribute collage materials (materials, scissors, glue sticks) equally across all working surfaces.

During the activity:

- Tell students they are going to make a cover for their journals, which will be used for the next several sessions.
- Ask students if they know the meaning of the word *collage*. If some shake their heads *no*, while others nod *yes*, ask for a volunteer to explain. Clarify that a

collage simply means “a piece of art made by sticking various different materials onto a backing.”

- Ask students to move into the task. Resist the urge to over-clarify or guide their work; this is, in part, a pre-assessment for you of what they can do independently with a minimum of adult support.
- As students work, sit quietly and begin to make observations. Some things you may want to notice and wonder about include the following:
 - Social skills: Do they take more materials than they need, or struggle to share? Do they use kind language to negotiate with peers for materials? Do they work quietly, or do they “think out loud,” verbalizing their thoughts or sharing their discoveries?
 - Fine motor skills: Are any of them left-handed? Do they demonstrate a preference for ripping rather than cutting, or ask for help with cutting?
 - Attentional regulation/motivation: do they stay focused on the task, or stand up and walk around the room? Is this because they are looking for help and additional resources, or because sitting for long periods is difficult for them?
 - Background knowledge: do they recognize the objects they are seeing in the magazines? Do they associate certain images with themselves and not others? Does anything appear “gross” or surprising to them?
 - Interests and strengths: To which images and materials do they seem to be drawn?

- Give a five or ten minute warning to help students prepare to finish their work. At this time, you can also tell them that you would like for them to share their work, but that they can choose to do this themselves or have a teacher share the work.
- For students who would like to have a teacher share their work, spend 1-2 minutes conferencing with those students to find out what they would like to share.
- After the work period has concluded, ask students to gather in a group.
- Each student should have a set amount of time (i.e. 30 seconds, 1 minute) devoted to explaining their work (whether they are sharing themselves or whether a teacher is sharing). Other students should be encouraged to listen respectfully without interrupting. One student may volunteer to be the timekeeper.
- After students have shared, teachers can open up the floor for questions and comments about what has been shared.

After the activity:

- Teachers should confer or reflect individually to determine how future lessons can be adapted based on students' approaches to this activity. I.e., if many students struggled to stay focused for a set amount of time, teachers may think about how to adapt future lessons so that they include frequent breaks, or small tasks performed one at a time over multiple days.

Host a "quotation mixer."

This activity involves choosing a favorite quotation to add to one's journal from a pre-selected collection of quotations. Here, I encourage the use of quotations featuring famous writers, cooks and other luminaries from the food world children will be entering.

Each child's selection may offer a window into how she or he sees the world he/she is about to enter, and the values around food he/she already holds, thus it serves as an organic pre-assessment as well.

I have included several sheets of my favorite quotations in the Appendix (Appendix A). These include a variety of sentiments, from the humorous to the philosophical, to resonate with a variety of personalities in the room. It includes simpler quotations for younger or beginning readers, and more complex quotations for older or more fluent readers. It also attempts to include a wide range of voices and perspectives from many cultures. (Not all quotations must be used.)

Learning objectives.

- Students will read, select and discuss favorite quotations on the topic (food) from a pre-selected collection. (CCSS.ELA-LITERACY.RI.3.1)
- Students will discuss quotations on food with a variety of partners. (CCSS.ELA-LITERACY.SL.3.1)
- Students will follow agreed-upon norms for beginning and ending their discussions with partners. (CCSS.ELA-LITERACY.SL.3.1.B)

Ingredients.

- Pre-printed quotations, cut out in strips (if you plan to reuse these more than once, consider printing on card stock and/or laminating them)
- Music or a chime
- A timer

Instructions.

Before the activity:

- Cut out quotations (see Appendix A).
- Place on tables.

During the activity:

- Students read the quotations, then choose one that they like. If students have questions about some of the “big” words they see in these quotations, prompt them to ask a friend before asking a teacher.
- Students move around the room, meeting in pairs for 1-2 minutes, telling others why they chose their quotation. (This can be done by turning “mingling” music on and off, or simply using a timer and a chime.)
- At the end, students can choose to copy down their own quotation, someone else’s quotation, or a variety of quotations, into their food writer’s notebooks.
- You may also choose to highlight additional biographical details from some of the role models above.

After the activity:

- Jot down notes on the quotations students preferred, and their reasoning. This may inform your instruction later on.

Listen to this: introducing students to the library

As you have taken the trouble to create an environment that is rich in diverse resources on food (see “Finding resources” for tips), it is a good idea to introduce this environment formally to children, and to allow them to begin to take ownership over the content—particularly the library.

In this activity, students are invited to explore the library in an open-ended way. Then, invite them to play “Listen to This,” selecting one interesting fact about one book they encounter. Encourage them not to rush, but to locate information they find genuinely useful or meaningful.

Learning objectives.

- Students will read and synthesize information found in the library. (CCSS.ELA-LITERACY.RI.3.1)
- Students will discuss their observations from the library with a variety of partners. (CCSS.ELA-LITERACY.SL.3.1)
- Students will follow agreed-upon norms for beginning and ending their discussions with partners. (CCSS.ELA-LITERACY.SL.3.1.B)

Ingredients.

- Your library of resources
- A 3 x 5 card (or several) for students to record their thinking
- Music or a chime
- A timer

Instructions.

Before the activity:

- Consider how students can comfortably and independently access the books. I.e., is it best to invite them in groups to choose materials from a library section of the room? To create centers, where students can rotate from table to table in order to take turns with specific groups of books (and in which case, should the books be grouped in any particular way)? To place books in baskets, allowing groups of children to take them to different corners of the room?
- Consider what basic information or instructions children may need to navigate the books in your room. I.e.
 - For younger children: Is it important in your setting for students to distinguish nonfiction books from fiction—and if so, how might you give them some basic pointers? Do they have some background with text features such as the Table of Contents or Glossary, or will you point these out?
 - For older children: Would you like for children to take note of the authors as well as the text in order to make connections between the author's perspective and his/her content—and if so, where might you direct them to

look to read author biographies? Is critical literacy—that is, noticing not only what is present but what is omitted in a single text or a collection of texts—important to you? If so, how will you be transparent about your own biases and choices as the curator of your library? About the cultural biases leading to the foregrounding of certain experiences in food books (i.e., the trope of the White cook in her immaculate kitchen, the White child discovering the wonders of gardening in the country) and the omission of others?

During the activity:

- Provide ample time for children to immerse themselves in the library. Give instructions to help them navigate it in an open-ended way. That is, help them access the texts and then know that in the end, they will choose one fact to share to help others find good resources in the library too, but that the ultimate goal is for the community of students to get to know the library well, not to find a fact immediately.
- As students explore the resources, take note of their reactions. Do some become immersed immediately, while others are reluctant to read? Are some drawn to nonfiction books with photos and pictures, while others are excited by cookbooks with interesting ideas, and others prefer picture books that tell stories? Do some like to read aloud while others need a quiet space?
- When students are ready with their facts to share, explain how the milling will work:

- Teachers and students should determine a shared system for determining who goes first (i.e. rock/paper/scissors).
- Teachers may need to provide sentence starters to remind students about the format for sharing and responding.
- Teachers should remind students that the turn is not over until both partners have responded.
- Students mill around the room, then find a partner at the chime. They decide who will go first.
 - Student A: “Listen to this. Did you know that [say fact about author]?”
 - Student B: “No, I didn’t know that [re-state fact about author], thank you for sharing!” or “Yes, I did know that [fact], very cool!” Did you know [second fact]?”
 - Student A: “No, I didn’t know that [fact], thank you for sharing!” or “Yes, I did know that [fact], very cool!”
- At the close of the activity, call students together. Ask each student to share an interesting fact, or something that surprised them, that they learned from someone else in the room.

After the activity

- Consider how children approached the opportunity to access the full library. What supports will you need to put in place for students who struggled with some aspect of this experience? For students who expressed enthusiasm for a certain

author or type of book—how will you guide them to more resources they will enjoy?

- You may choose to record students’ words on chart paper, or in a SmartBoard document with a photograph of the book in question, which can then be printed/laminated and placed near the library with students’ ideas, for future reference by classmates.

Take a virtual tour of a real world test kitchen.

America’s Test Kitchen, a media organization where I am fortunate to know some staff members, is, in my humble opinion, an ideal model for interdisciplinary, food-focused learning in the “real world.” In the multi-story space of this veritable factory of food ideas, located in Brookline, MA, , a variety of creative individuals work together to share best practices with avid home cooks. On any given day, they may research recipes in the library, test them in a kitchen lab, document the results in a photography studio. Then, they share them with the outside world, via online newsletters, magazines (*America’s Test Kitchen, Cook’s Country*) and cookbooks. Though their readers come from all over the country, hailing from many different backgrounds, they all share the same passion as the people at America’s Test Kitchen: they want to know what makes recipes work well, and how to make them better.

This activity provides a way for teachers to assess students’ familiarity with, and reaction to, the type of setting in which they are about to be immersed, combining cooking and interdisciplinary academic research (using methodologies from the worlds of

science, social studies and math). It also provides a jumping-off point for discussions about students' interests and questions as they relate to what "real" cooks and food writers do, and how that aligns with the work in this unit.

Learning objectives.

- Students will be exposed to, and begin to articulate their understandings related to, science-specific concepts such as *experiments* and *variables*. (CCSS.ELA-LITERACY.RI.3.4)
- Students will discuss the ways in which scientists at America's Test Kitchen ask "why" questions and use the scientific method in specific ways to develop recipes. (CCSS.ELA-LITERACY.RI.3.3; NY Science Standards, S1.1)
- Students will build on one another's ideas about the vocabulary and content related to the video in this activity. (CCSS.ELA-LITERACY.SL.3.1)
- Students will recall information from the video and sort it via a K/W/L chart. (CCSS.ELA-LITERACY.W.3.8)
- At the teacher's discretion, students will answer more questions about the video in written form. (CCSS.ELA-LITERACY.RI.3.1)

Ingredients.

- Video <https://www.youtube.com/watch?v=ntKYWimoLAs> (2min, 50 sec)
- A Smartboard or computer suitable for viewing video
- A Smartboard document or other means of capturing students' thoughts in written form

Instructions.

Before the activity:

- Cue up the video on the screen
- Create a K/W/L chart format (What I Know/What I Want to Know/What I Learned).

During the activity:

- Using the K section, discuss the relevant vocabulary prior to the video:
 - What is an experiment?
 - What is a variable?
 - What kinds of people do experiments?
 - Why would people want to do experiments with food?

If students **know** about these things, ask for volunteers to share their answers.

If students are unfamiliar with these terms, add them to **want to know**.

Briefly discuss any vocabulary terms that are unfamiliar to all students, then instruct them to watch the video to **learn** more.

- Introduce the video:
 - *“This video takes us inside a place called America’s Test Kitchen, located in Massachusetts. Like the people at America’s Test Kitchen, we’ll be using a lot of different activities and strategies to understand food better, and to share what we’ve learned with other people. Let’s watch to find out*

some of the things the cooks here do to learn about food, and how this relates to our discussion of experiments and variables.”

- Watch the video.
- Teachers should probe students to assess what they noticed and learned from the video, adding to the K section of the chart.

Example chart

<p>Questions:</p> <ul style="list-style-type: none"> ○ What is an experiment? ○ What is a variable? ○ What kinds of people do experiments? ○ Why would people want to do experiments with food?

I Know	I Want to Know	I Learned
Scientists do experiments.	<p>What is a variable?</p> <p>Why do people experiment on food?</p>	<p>The scientists at America’s Test Kitchen do experiments with many variables to figure out the best way to make a recipe.</p>

- Teachers may also choose to ask some or all of the following questions, either in the meeting area, or via a written assessment, i.e. an exit slip. (An exit slip is a

short written survey or quiz for students following a lesson, given with the expectation that they will not leave the room until it is returned. Also known as an “exit ticket.”)

- What are some things you noticed people doing to learn about food in this video?
- Why might it be helpful to do experiments with different versions of a recipe?
- Why might it be helpful to test different variables of a recipe before deciding on the version you like best?
- Why might it be helpful to share what you’ve learned with other people? Who might like to know about the results of food experiments at America’s Test Kitchen?
- What do you think students your age need or want to know about food?

After the activity

- Teachers should confer or reflect individually to determine how future lessons can be adapted based on students’ approaches to this activity. I.e., if this represented students’ first exposure to the idea of the scientific method, teachers might choose to spend more time discussing and deepening understandings around this idea during the taste test activities that follow.

Suggested read aloud: Teddy the Taster, by Lawrence F. Lowery.

In this book, Teddy and his friends become curious about the way various foods taste, moving away from the extremes of “yuck” and “yum” to describe the complexities they find in between. The book provides children with a role model for open-minded behavior when encountering the new. The protagonists are primarily White. The combination of simple and sophisticated vocabulary terms makes reading aloud (versus using primarily as an independent reading book) the best option for presenting *Teddy the Taster* to diverse groups of readers.

This story can provide a useful jumping-off point for discussing how readers should approach tasting new foods in the kitchen and classroom, ideally with an open mind.

Don't yuck my yum: video and role play.

As Derman-Sparks (1989) notes, saying “yuck” about a person’s preferred food can quite literally make a child feel as though he/she is the object being rejected. Because students in this unit may be trying foods that are unfamiliar to them, and/or foods that are culturally significant to some community members and not to others, they may benefit from a discussion about how to handle these new experiences.

I first heard the phrase “don’t yuck my yum” used in a culturally diverse kindergarten classroom on Manhattan’s Upper West Side, in which the teacher had made it clear to her students that they were not allowed to disparage any other student’s lunch or food choices. Having known many friends from immigrant backgrounds who experienced shaming as children from classmates over fragrant foods brought from home,

such as Korean kimchi or Indian curry, I appreciated the logic (and syntax) of her simple lunchtime rule: “Don’t yuck other students’ yum.”

I have since heard the phrase “Don’t yuck my yum” used in many other school settings. I have also heard it more widely interpreted to mean, “If I like something and it’s not doing any harm to you, don’t tell me to stop, or say negative things about it.”

In this activity, students begin by reacting to a clip from a short video in which Anthony Bourdain, host of the travel show *Parts Unknown* (Bourdain, 2014), encounters a new way to eat pizza in Tehran: with ketchup on top.

Though these two ingredients may be familiar to many students, the combination may strike some as odd. After the clip, the group should discuss not only their own reactions, but the way that Bourdain handled himself in the clip.

Learning objectives.

- Students will discuss the idea of “don’t yuck my yum” in the context of watching a video about cross-cultural food conversations. (CCSS.ELA-LITERACY.SL.3.1)
- Students will refer to evidence from the video to support their discussion. (CCSS.ELA-LITERACY.W.3.8)

Ingredients.

- Video: <https://www.youtube.com/watch?v=p2-cwlmtsms> Watch from 1:00-1:30. (Note: at 1:30, Bourdain opens a can of non-alcoholic beer. Take care to stop short of this moment if you feel it’s not appropriate for your group, or use a video trimming service like TubeChop to select just the part you want.)

- A Smartboard or computer suitable for viewing video
- A Smartboard document or other means of capturing students' thoughts in written form
- A chart paper or SmartBoard document to capture student responses.
- A document featuring the short dialogue from the video (i.e. in the SmartBoard document above, or printed out) so students can refer to what was said as they discuss the video *after* viewing.

Bourdain: I called out for a little delivery.

Bourdain (Voiceover): One last thing everyone's been telling me I have to try...Iranian pizza.

Bourdain(surprised): It comes with ketchup!

Iranian teenager: How do you like Iranian pizza?

Bourdain: Not bad! We don't put ketchup on pizza, though.

Iranian teenager: I love ketchup.

Instructions.

Before the activity:

- Cue up the clip from *Parts Unknown*.
- Prepare a chart paper or SmartBoard document to capture student responses, with the dialogue. (Do not show until after students have viewed the video.)

During the activity:

- Set up the scene for students:
 - *“In this scene, from Anthony Bourdain’s Parts Unknown, Anthony Bourdain visits a group of young people in Tehran, the capital of Iran. After checking out their cars, Bourdain gets hungry. In this clip, we’ll see him sampling a local specialty that may look familiar, but is served with a local twist. I want you to notice not only the food, but how each person talks about it, and how each person might be feeling after the conversation.”*
- Watch the video.
- Show or hand out copies of the dialogue so students can refer to it.
- Discuss some or all of the following:
 - Who is the “we” that Bourdain is talking about? Does the teenager belong to this “we”?
 - Do you think there is a right way and a wrong way to eat pizza, or can there be many different ways?
 - How did Anthony Bourdain feel when he saw how the teenagers were eating pizza?
 - How do you think the Iranian teenager felt as Bourdain was sharing his opinion about it?
 - What was positive about the way Bourdain responded? What could he have done to improve it?
 - What else did you notice about this scene? Did anything surprise you?

- Tell students that you would like to begin brainstorming ideas for ways to talk about food together that make people feel respected, even if they have different opinions about food. Ask: *“What kinds of affirmative (do’s, not don’ts) reminders can we write to help ourselves remember how to respond respectfully to someone’s opinions about food, even if we don’t agree?”*
- Model a few potential responses, recording them on the SmartBoard document or chart paper.

Example norm chart

DON'T YUCK OUR YUM (OR ANYONE ELSE'S)

In our community, we should always say “Thank you!” when we are offered a new food, whether or not we plan to try it.

In our community, we should always try to take a very small bite when we are offered a new food (unless we have allergies to that food).

In our community, we should always keep a calm expression on our faces, chew and swallow completely, and say thank you when we try a new food, whether or not we like the taste.

In our community, we should always calmly say “No thank you” instead of “Yuck!” or “No!” when we are offered a food we know we can’t eat, or don’t like.

After the activity:

- Consider whether students seem ready to engage in respectful eating behavior as a community.
 - If students have already received a great deal of socialization on this topic in your setting, you may opt to move ahead to creating more specific norms for your kitchen environment.

- If they seem to need more practice considering and responding to different scenarios (as students did in my setting), you may wish to try the activity below to help them deepen their sense of empathy and expand their skill-set as allies. The ultimate goal is to make the kitchen classroom a safe place to take risks and try new things, for students from all cultures and food backgrounds.

Don't yuck my yum: additional role playing.

This activity can be done as an extension of the activity above if the group needs more support regarding respecting people's food choices. Here, students act out appropriate responses to hypothetical events, based on the norms developed after watching the video.

Learning objectives.

- Students will discuss the idea of “don't yuck my yum” in the context of engaging in role playing scenarios featuring cross-cultural food conversations. (CCSS.ELA-LITERACY.SL.3.1)
- Students will refer to evidence from the role play scenarios to support their discussion. (CCSS.ELA-LITERACY.W.3.8)

Ingredients.

- 2-4 role play scenarios, printed out

Instructions.

Before the activity:

- Prepare “don’t yuck my yum” scenarios (some are provided below) with which students can role play respectful responses.
- Scenarios may come from moments experienced by yourself or people in your community, or they may be hypothetical. (If they are hypothetical, take care not to rely on stereotypes—in fiction, you can include a variety of different names, family structures, foods, etc.!))
- Scenarios can provide one perspective on an event, or (ideally) multiple perspectives on one event.

Scenario 1.

- You are visiting Rekha’s house with your friend Sara. You notice an interesting smell wafting from the kitchen, where her dad is cooking. You’re not sure what it is. Sara says, “Ew, Rekha, what’s that smell?” Rekha looks down at her shoes. How do you respond?
- If Sara was in our cooking class, how might she rephrase her thinking?
- Now imagine you are Rekha. How do you want your friends to respond to your father’s cooking?

Scenario 2.

- Your grandma made salty beef and seaweed salad for you again, for the

third day in a row. You're interested in eating something else. You notice that your friend Johan has brought a peanut butter and jelly sandwich—which you love—and is also complaining that it's the third day in a row of PB&J. You suggest a trade. How do you want your friend to respond?

- Now imagine you are Johan. You have never tried salty beef or seaweed salad before. You aren't sure if you want to trade, but you're curious to try it. You want to respond politely even if you don't like it, without 'yucking' your friend's food. (Even if your friend is tired of it, you know your friend's grandma still worked hard to make it.) How do you do so?

During the activity:

- Provide scenarios to students. Discuss the format in which you wish them to respond. A few options:
 - If you have more than one adult in the room, you may choose to act out one or both scenarios yourselves, then invite students to comment.
 - Teachers can model one scenario, then ask for volunteers to role play in front of the whole group.
 - Students can enact role playing scenarios in small groups, with each student trying out one or both roles, then come back together to share how it made them feel.

- Invite students to discuss the experience as a whole group, and to brainstorm additional norms that could be added to the document created in the previous activity. Some questions to help facilitate the discussion may include:
 - *Do you know any stories that remind you of the stories we talked about today? If so, how did you handle it? Do you think our class would benefit from acting out a positive response to the events you witnessed?*
 - *Some of us have food allergies, or strong food aversions (i.e. a genetic trait that makes cilantro taste too bitter to eat). These may make it hard for us to say “yes” to every food. How can we say “no” politely while still protecting ourselves?*

After the activity:

- Reflect on what was shared. Did any students share experiences or ideas that should be further unpacked by the group—i.e., a real conflict between themselves and a peer? Did students offer any solutions for making the larger school community welcoming? Follow up as necessary.

Suggested read-aloud: Dinner with the Highbrows: A Story about Good (or Bad) Manners, by Kimberly Willis Holt.

Bernard has been invited to dine with the Highbrows, and his mother arms him with advice on how to impress them with his table manners. Unfortunately, her advice applies to eating at home, and they’ve chosen to dine out, making some rules (like offering to do the dishes) moot. Meanwhile, Bernard’s hosts appear to believe themselves

above *any* good rules for eating, causing him to question how he himself should act. The protagonists of this book are all White.

This book can help to facilitate a conversation about what it means to do the right thing at the right time, how one might figure this out, and which rules for behavior the group wishes to establish and follow together to avoid awkward scenes like the ones in the book. All themes that are developmentally relevant for elementary school children (and grownups, too!).

Begin a co-created list of kitchen norms.

This activity concludes this section of early immersion activities. The next section will take students into the kitchen for hands-on work. This final activity prepares teachers and students to work together, safely and respectfully, in that setting. It takes into account both physical safety and emotional safety when taking risks together as cooks.

This activity guides students and teachers to co-create basic norms, asks students to sign an initial kitchen contract, and establishes a system for capturing future norms as they arise. As students add new tips over time, they will end up with evidence of their learning, as well as the knowledge to recreate these activities at home, safely.

That said, teachers are responsible for keeping children safe, and that means staying one step ahead of them when it comes to creating a safe kitchen environment. To that end, a full list of suggested safety tips and norms for *teachers* using kitchen classrooms, covering most common cooking scenarios, is provided in the previous

section. Be sure to consult this list before every cooking activity, and to share relevant tips with every lesson.

Learning objectives.

- Students will read and respond to the written rules of the classroom. (CCSS.ELA-LITERACY.RI.3.1)
- Students will understand the relationship between creating rules and avoiding risk and danger in the kitchen setting. (CCSS.ELA-LITERACY.RI.3.3)
- Students will add their own ideas to the written rules of the classroom. (CCSS.ELA-LITERACY.SL.3.1)

Ingredients.

- 4+ large pieces of chart paper (this works if you are based in your own classroom, and will be for the duration of the unit)
- A folder with 4+ pages of paper to serve as mini-posters (this is better if you are sharing a room and/or your materials must be portable) - see Appendix B for example
- Markers for children to add ideas to the paper
- Optional: sticky notes for children to respond

Instructions.

Before the activity:

- Print or write the following general norms (adjust as you see fit):

Kitchen rules

- We wash our hands three times:
 - 1) when entering class
 - 2) after touching one’s mouth, nose, floor, or shoes, particularly when sick
 - 3) before eating
- Be okay with mistakes--yours and others’. Mistakes help us learn.
- If you need a break, ask for one. A focused cook is a safe cook.
- Before you eat: help to set the table, thank the cook, and wait until all are seated.
- Try it before you decide if you like it (but know that only you can decide if you will try it).
- You don’t have to like everything that you try, but you shouldn’t make others feel badly if they feel differently. (The “don’t yuck my yum rule.”)
- During the meal, take the time to discuss the food, and decide what you think about it.
- Take the recipe home and try it again if you think it needs changing.
- Help to clean up the table and the dishes.
- If no one asks you to help them cook or clean up, it is still your job to offer.
- [Leave space here to add more ideas from students.]
- _____
- _____
- _____
- _____
- _____
- _____

We, the undersigned, agree to follow these rules.

[Provide a space for students to sign, i.e.:

- Prepare the large chart paper or smaller 8 x 11 papers for students to respond.

Suggested headings to prompt and organize students’ thinking:

*How can we keep our **bodies** safe in the kitchen?*

*How can we keep our **tools** safe in the kitchen?*

*How can we keep our **food** safe in the kitchen?*

*How can we keep people's **feelings** safe in the kitchen?*

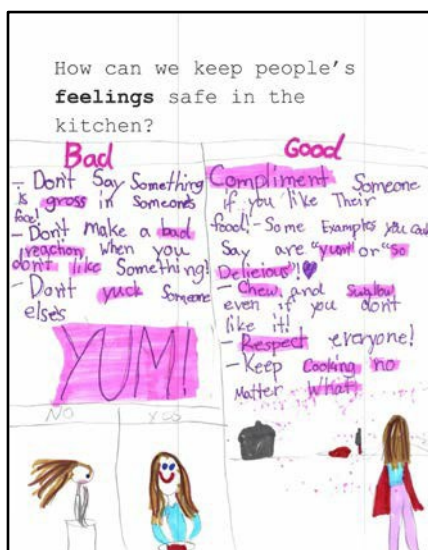
During the activity:

- Review the initial draft.
 - Invite students to read the first draft of the kitchen contract you have prepared.
 - Tell students that, just like in the real world, communities of people are always changing their rules so that they are more complete, more fair, and more representative of the values held by those people. (For example, the Constitution has many amendments that were written years afterwards.)
 - Tell students that in this activity, they will have time to brainstorm any additional rules they think need to be added right away, before the class begins cooking. They should also plan to add on to this document throughout the unit, so that by the end of the unit, the list will be even better than it was when they started.
- Prepare for students to add on.
 - Ask students to count off in fours. Ask Group 1 to gather around the first poster, Group 2 with the second and so on.
 - Ask one volunteer from each group (with neat handwriting) to be the scribe for the group.

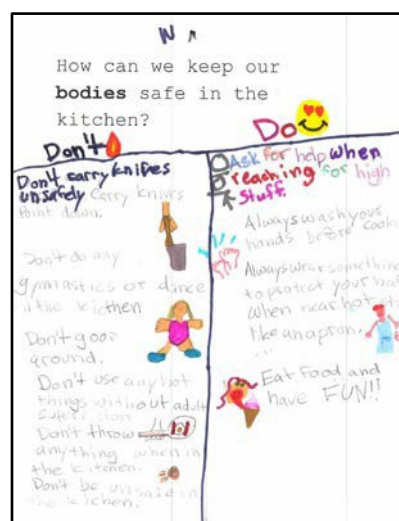
- Ask the students to brainstorm ideas or norms about the topic of the chart paper.
- When groups appear to be finished or close to finished with one topic (allow about 2-5 minutes), ask them to rotate to the next chart paper. A second scribe can take a turn there.
- Students may rotate through all four posters or just 1-2, as time allows.
- Prepare for students to share the thinking from each poster.
 - Students can stay with the posters and share out there, or come back together in the meeting area to share.
 - A student in each group (ideally one who did not also write) can be asked to share out the answers on the page verbally.
 - Alternatively, students can take a “gallery walk,” quietly reading each other’s posters and giving feedback on Post-It notes.
- Decide together as a community which ideas should be added to the kitchen contract. Add them.
- Tell all students that as they explore food in the kitchen classroom, other ideas for safety rules may emerge. They will have the responsibility for writing them down. Show them where they can do this (i.e. on a poster or in a paper kept safe in a folder during each session).
- Tell students that they will all receive a copy of the student-created rules for their binders at the end of the unit. (These can be photocopies of the papers, or photographs of the posters.)
- Conclude the activity by asking all students to sign the updated kitchen contract.

After the activity

- Teachers should confer or reflect individually to determine how future lessons can be adapted based on students' approaches to this activity.
 - I.e., if students shared many fears, gaps in knowledge about food safety, or inaccurate understandings of the risks involved with cooking, teachers can opt to build in time to be explicit about safety practices, and to carefully record new rules for students' reference.
 - If students appear cognizant of kitchen safety practices, teachers may opt to simply remind students verbally about safety rules at the start of each cooking activity, then build in time to brainstorm final learnings towards the end of the unit for the rule list.



Examples of student work.



Primary Recipe Investigation

By this point, students should have developed a collaborative community that is ready to collectively investigate food in a hands-on, in-depth way. (For activities that prepare them for this work, see previous sections.)

In this section, students will unpack two foundational recipes (dough and sauce), for which a series of related (and interrelated) interdisciplinary lesson plans are provided.

In the first set of lessons, students learn that many different kinds of people around the world eat one common food: bread. However, it often comes in different shapes. They explore the scientific basis for differences in bread by reading, questioning and cooking different doughs. They begin to stretch their writer's muscles as well, as they detail their observations from their hands-on exploration of different doughs.

In the second set of lessons, students build on these understandings as they examine the scientific basis of flavor (we all taste five distinct flavors). They use mathematical tools, such as surveys and graphing, to uncover the differences in food preferences that are distributed across the class population. Finally, students author their own recipes for flatbread and sauce, personalized for their own unique taste buds.

Not coincidentally, the recipes for dough and sauce constitute the foundation for pizza, which can feature a variety of toppings, and is related to a vast family of flatbread recipes from all over the world. Educators are, accordingly, encouraged to use these two basic recipes as the foundation for further explorations of ingredients (i.e. vegetables, cheese), which can add complexity to students' recipes. They are also encouraged to add complexity to the curriculum itself through field trips, interviews and other meaningful experiences that help that students connect their in-class learning about basic cooking technique to the outside world of food writers and chefs. Suggestions are provided

within this section for ways to continue this interdisciplinary work once it has begun, and to tailor it to your setting and your community's priorities.

At the same time, knowing that educators' time is always in short supply, I have tried to make this primary investigation as rich and complete as it can be as a stand-alone activity series. The two foundational recipes I have chosen offer myriad opportunities for academic investigation by design. Under the guise of studying pizza (what student would refuse this opportunity?), students will encounter important foundational understandings about literacy, math, science and social studies within the context of hands-on work on the kitchen. They will then use this enthusiasm and experience to inform the process of writing about food in the classroom, moving through the steps of the writing process as they would in a classroom writer's workshop. The ultimate goal will be for students to publish and share their recipes, however simple or complex, with their families, along with the observations they have collected in their notebooks along the way. (For more ideas and information about sharing the final product with families, i.e. through a published cookbook or blog, I suggest previewing the subsection entitled "Choices for publishing recipes," which appears later on in this section.)

Because students will alternate between having experiences and reflecting on them, this section contains both kitchen and classroom activities. Kitchen activities primarily follow a direct instruction model—that is, a model in which learning objectives and pacing are guided more intentionally, in a structured way, by adult educators. Some will have two lists of "ingredients": one for materials that you may have on hand or prepare at school (i.e. bowls, spoons, note-taking materials) and one for food items that you may need to shop for at the store before the activity (i.e. flour). Classroom activities

may take place directly before or after the kitchen activities, or during a separate learning block or session. They also provide a way for students to connect their experiences with food to the various academic disciplines they are practicing during other parts of the school day: reading, writing, math and literacy.

Suggested read-alouds continue to be included in this sequence as well, as a means for introducing and deepening conceptual understandings and background knowledge for students throughout the unit. As noted previously, food-related read-alouds can take place before or after activities listed in this section, or during different learning blocks or sessions.

The activities in this section connect to a wide variety of Common Core and local state standards. These standards, as they relate to children aged 8+, include the following requirements and areas of focus for students:

Common Core: speaking & listening standards.

- Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners... building on others' ideas and expressing their own clearly. (CCSS.ELA-LITERACY.SL.3.1)
- Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). (CCSS.ELA-LITERACY.SL.3.1.B)
- Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. (CCSS.ELA-LITERACY.SL.3.1.C)

- Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (CCSS.ELA-LITERACY.SL.3.3)

Common Core: writing standards.

- Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (CCSS.ELA-LITERACY.W.3.2)
- Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. (CCSS.ELA-LITERACY.W.3.3)
- With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (CCSS.ELA-LITERACY.W.3.4)
- With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (CCSS.ELA-LITERACY.W.3.5)
- With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others. (CCSS.ELA-LITERACY.W.3.6)
- Conduct short research projects that build knowledge about a topic. (CCSS.ELA-LITERACY.W.3.7)
- Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. (CCSS.ELA-LITERACY.W.3.10)

Common Core: reading standards.

- Determine the main idea of a text; recount the key details and explain how they support the main idea. (CCSS.ELA-LITERACY.RI.3.2)
- Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently. (CCSS.ELA-LITERACY.RI.3.5)
- Distinguish their own point of view from that of the author of a text. (CCSS.ELA-LITERACY.RI.3.6)
- Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence). (CCSS.ELA-LITERACY.RI.3.8)
- Compare and contrast the most important points and key details presented in two texts on the same topic. (CCSS.ELA-LITERACY.RI.3.9)

Common Core: language standards.

- Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies. (CCSS.ELA-LITERACY.L.3.4)
- Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships (e.g., After dinner that night we went looking for them). (CCSS.ELA-LITERACY.L.3.6)

Common Core: math standards.

- Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$. (CCSS.MATH.CONTENT.3.NF.A.1)

- Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$.
Explain why the fractions are equivalent, e.g., by using a visual fraction model.
(CCSS.MATH.CONTENT.3.NF.A.3.B)
- Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (CCSS.MATH.CONTENT.3.OA.A.3)
- Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.
(CCSS.MATH.CONTENT.3.MD.B.3)
- Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
(CCSS.MATH.CONTENT.3.MD.B.4)

NY state standards.

Science: process skills.

- Explore and solve problems generated from school, home, and community situations, using concrete objects or manipulative materials when possible. (M3.1)
- Ask "why" questions in attempts to seek greater understanding concerning objects and events they have observed and heard about. (S1.1)

- Observe and discuss objects and events and record observations. (S1.1a)
- Articulate appropriate questions based on observations. (S1.1b)

Science: major understandings.

- Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light. (3.1c)
- Temperature can affect the state of matter of a substance. (3.2b)
- Changes in the properties or materials of objects can be observed and described. (3.2c)
- Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die. (1.2a)
- Food supplies the energy and materials necessary for growth and repair. (4.2b)
- All living things grow, take in nutrients, breathe, reproduce, and eliminate waste. (5.1a)

Social Studies: practices.

- Identify the variety of resources available in a particular world community used to produce goods and/or provide services. (E.2)
- Examine the goods and services provided by world communities; describe what goods and services a world community trades with other world communities. (E.4)

Social Studies: key ideas.

- Communities share cultural similarities and differences across the world. (3.5)
- World communities use human and natural resources in different ways. (3.9a)
- People in communities have various ways of meeting their basic needs and earning a living. (3.9b)

Activities.

As they explore the first foundational recipe (for dough), students focus on the fact that many different kinds of people around the world eat one common food: bread. They also learn how to use nonfiction texts and the scientific method to explore the scientific basis for differences in bread.

Guess the Bread.

This activity kicks off students' initial interdisciplinary investigations with bread. It allows teachers to pre-assess students' existing background knowledge about bread. It also allows the class to brainstorm a list of ways they have learned about food in the past, and might continue to learn about new foods in the future.

The implicit message of this activity is that there are many different ways of knowing, and that most people draw on several ways of knowing simultaneously to make meaning. It also drives home the point that we are rarely alone as we make meaning: often, humans are dependent on one another's discoveries and observations throughout this process. (This big idea in education is particularly foregrounded within Reggio philosophy of early childhood education, which inspired this lesson.)

This activity contains the potential for surprisingly rich and student-centered discussions that may differ from group to group. Thus, your group may not address all of the learning objectives described here. If so, not to worry. It is more important to have the experience and to reflect on what it brings up.

This activity also represents an opportunity to revisit norms and expectations for respectful partner-based work, which students will engage in several times throughout this series of investigations.

As a general rule, I never tell students to “pick your own partner” or “form your own group” for learning activities. In my experience, this is anxiety-inducing for children who are otherwise frequently left out. This creates a less-than-inclusive environment. Instead, I pair students beforehand myself, based on my sense of their complementary strengths, or I choose names at random, using Popsicle sticks with children’s names on them drawn from a can. I will sometimes keep records of partnerings to ensure students get to work with a wide range of peers.

Students should be reminded to respond neutrally when informed of pairings—not shouting “Yes!” or grimacing in response to being partnered with a particular person. Consider doing this now if your group is still new to engaging in partnered work.

Learning objectives.

- Students will engage in a guessing game in partnerships, building on one another’s ideas. (CCSS.ELA-LITERACY.SL.3.1)
- Students will use information provided by teachers and students to check and clarify their guesses. (CCSS.ELA-LITERACY.SL.3.1.C)

- Students will share their takeaways from the activity in a group setting, in which they will brainstorm ways that they can and will learn about food (CCSS.ELA-LITERACY.SL.3.1.B)
- Students will notice that bread is common to many cultures, but that it differs from place to place in terms of its size, shape and function. (NY Social Studies Standards, 3.5)
- Students may note that breads differ in size and shape, for reasons that have both a scientific basis as well as a cultural basis. (NY Science Standards, 3.1c)
- Students will reflect on the reasons underpinning similarities and differences between breads served around the world. (NY Science Standards, S1.1)

Ingredients.

- Bread guessing game sheet (1 per partnership; see Appendix C)
- Bread hints (3 sets per page, see also Appendix C; cut into strips to hand out later in the activity)
- Optional: Social studies extension (included in Appendix C)
- SmartBoard or chart paper to record student ideas

Instructions.

Before the activity:

- Print out guessing game sheets and bread hints.
- Cut the bread hints into strips for later use.
- Print out the social studies extension (the last 2 pages of Appendix C) if desired.

During the activity:

- Briefly introduce the guessing game activity, then create partnerships.
- Working with partners, students take the bread challenge: how many can you name?
- After students have 5 minutes or so to name the ones they know, hand out strips to different groups with hints related to the meaning of the words and shapes of bread. I.e.:
 - The word “concha” in Spanish means “shell.”
 - The word “croissant” is related to the English word “crescent,” which is the shape of the moon when it’s not quite half full.
 - The word “baguette” is related to the Italian word “bachetta,” which means “a small rod,” and the Latin word baculum, which means “a stick.”
 - In Ethiopia, injera is used as a plate and an eating utensil, as well as a side dish.
- If any partnerships are still stuck after an additional 2-3 minutes, invite the partnerships to ask other partnerships for help.
- Come back together and reflect.
 - Review the names of the bread and the region, country or culture associated with each bread.
 - Pizza (Italy)
 - Croissant (France)
 - Baguette (France)

- Concha (Mexico)
 - Pita (Middle East)
 - Injera (Ethiopia)
 - Naan (India)
 - Matzoh (Jewish communities around the world)
- Discuss how this activity felt and what students noticed. Potential questions:
- How did you know which was which? What helped you?
 - Which of these have you had at home?
 - Who here has made bread before? What ingredients did you use?
 - Some of these breads are flat (flatbreads) and some are fluffy breads. Which ones are flat and which ones are fluffy? (This will be relevant again when students make yeasted bread.)
- Co-create a list with students of the many different methodologies they used to figure out the names of the bread.

Example list

Ways to learn about new foods

Trying it at home
 Walking around our neighborhood
 Going into stores
 Reading about it
 Looking for language clues or connections
 Asking a friend who has tried it
 Having friends who share their cultures with us
 Traveling

- Place this list in the room as a reminder of all the ways students can consult community resources when learning about food throughout this investigation.
- Optional: provide the last 2 pages of Appendix C (a recording sheet and a reflection sheet) so that students can jot down their own notes and ideas about this activity for their journals.

After the activity:

- Teachers should confer or reflect individually to determine how future lessons can be adapted based on students' approaches to this activity.
 - I.e., it may reveal that many students are familiar with European foods, but may benefit from exposure to other types of foods eaten around the world. (This activity prompted me to bring in *concha* bread from the Mexican bakery near my home in Queens, because so many students were curious to try it.)
 - It may also reveal that some students are social learners (students who willingly seek out other students as resources, whether or not this is included in a teacher's plans). Meanwhile, others may be more introverted, and will need structure and planning to coax out their social learning selves when it comes to working in partnerships or interviewing to get information.

Suggested read aloud: Bread, Bread, Bread, by Ann Morris (1989)

The author of this book (a former educator at Bank Street College of Education) explores the same idea above—that children around the world share the same staple food—but with a nonfiction approach. Featuring photos from around the world of children of many races and backgrounds (taken by Ken Heyman, a frequent collaborator of anthropologist Margaret Mead) paired with easily-decodable language.

A quick read, the book provides an expeditious visual trip around the world that helps students to build background knowledge about the diverse ways in which a simple dough recipe can feed the world.

Everyone eats bread.

Bread is assembled from a set of basic ingredients common to many cultures (a social studies concept). However, it comes in many shapes, determined by whether and yeast (a microorganism) is used to leaven it (a scientific concept). This activity helps students to discover these understandings through hands-on exploration. It will also help teachers to pre-assess students' existing knowledge, language, and schema (internal mental frameworks) as they pertain to bread and bread-making.

This activity works particularly well if students have engaged in the Bread Guessing Game activity, as they will already have been exposed to the idea that there is a wide range of breads available around the world.

Learning objectives.

- Students will explore and categorize different types of bread served in their community, categorizing and describing them based on group-determined criteria. (NY Science Standards, M3.1)
- Students will understand that communities share cultural similarities and differences across the world, i.e., different ways of making the same food. (NY Social Studies Standards, 3.5)
- Students will prepare to observe the differences between yeasted and non-yeasted bread, coming to understand that objects have properties that can be observed, described, and/or measured (NY Science Standards, 3.1c), and that changes in the properties or materials of objects can also be observed and described (3.2c).

Ingredients.

- A variety of flour-based bread products available in your area, including flat, unleavened breads (i.e. chapati, matzoh, flour tortillas) and yeasted breads (i.e. sourdough bread, bagels, croissants, English muffins). These may come from your local store, cafeteria program, or (with some advance planning and respectful home-school communication) can be solicited from students' families.
- Paper plates (to allow breads to be handled without being touched)
- Tablet, phone or camera for recording students' ideas about categories
- SmartBoard or chart paper, for recording students' ideas - leave room for:
 - A t-chart for categorizing bread
 - Space underneath for capturing ideas about why bread comes in different shapes

- Assorted bread toppings (i.e. butter, honey, jam, cream cheese, hummus, sunflower butter; you may wish to skip nut allergens i.e. peanut butter)

Instructions.

Before the activity:

- Set out breads on a table, one to a paper plate, where students can easily see all the different types of bread. (If there are many students, create a few centers with the same types of bread on each.)
- Write the name of the bread on each paper plate.
- Place toppings in another area where they can be easily accessed later on.
- Create a T-chart on a Smartboard or chart paper to capture student ideas.
- Charge camera.

During the activity:

- Invite students to wash their hands in preparation for handling shared foods.
- Ask them to gather close to a table where they can see the different types of bread.
- Elicit a few different noticings right away: what are some similarities that you see between the foods on the table? What are some differences? (I.e. students may notice that all are types of bread, or all are roughly the same hue; others may notice they have different shapes.)

- Point out that one similarity students should keep in mind is that all of these breads, from around the world, are made by using two common ingredients: wheat and water.
- Tell them that you would like for them to create categories for the bread, sorting them into types. For this first round of sorting, decide what the criteria are for these categories. (Example: big and small.)
- Initiate the first open-ended sort.
 - Separate students into groups small enough that they are not crowded around the table. Observe and listen in as they negotiate the task.
 - Are they noticing that the breads have different shapes?
 - Are they using background knowledge about the breads' areas of origin to classify them?
 - Are they noticing other salient characteristics of the bread that may not directly relate to the idea of yeasted/uneasted bread, but are still interesting—i.e., color, smell, key ingredient, type of meal with which the breads are commonly associated?
 - After about 3-5 min, ask a volunteer (one from each table group) to reveal their categories and reasoning.
 - Take photographs to document the students' first round of thinking.
- If time allows, invite students to sort in other ways to see if there are other interesting categories they notice or thought processes they are using to categorize and generalize food. Take another set of photographs to document this different way of thinking.

- Next, prompt them to notice and sort: which breads are flat, and which are more round and puffy?
- Again, take a set of photographs to document this different way of thinking.
- Next, following this sort, come together to create a T-chart reflecting these categories.

Example T-chart

Flat	Round/Puffy
<ul style="list-style-type: none"> - Flour tortilla - Chapati - Matzoh 	<ul style="list-style-type: none"> - Croissant - English muffin - Bagel

- Looking at the chart and/or the photographs of the sort (flat and round breads), ask students: why do you think breads have different shapes, even though they are made with many of the same ingredients? Write this question down.
- Prompt them to turn & talk to a partner (don't forget to facilitate this partner-choosing process if need be): If wheat and water are *constants* in every bread recipe, what could be the *variable* (calling back to the America's Test Kitchen conversation in the previous section) that could be changing their shape?
 - As they turn & talk, students might note function: tortillas have to be flat to hold toppings, whereas bagels need to hold toppings between two slices, so they need to be able to have some heft on top and bottom.
 - Students might make some guesses about the ingredients that make things rise: i.e. eggs or baking soda (or yeast!).
- Record students' first guesses beneath the t-chart before you move on.

- Note that in science, a guess (one that you plan to check) is called a *hypothesis*. (You may note that this is related to the literacy vocabulary term *inference*, which is a guess based on limited information provided in a text. You may also clarify that a hypothesis may *begin* as an inference, but the intention is to then check this guess using an *experiment*.)

Question: Why do breads have different shapes?

Hypotheses (Guesses)

- Flat breads are made without eggs. Round breads are made with eggs.
- Flat breads are flat because they get rolled with a rolling pin. Round breads don't.

- Ask students to share ideas for ways they could check these guesses.
- Tell students that in the next activity, they'll learn more about what makes breads change their shape.
- Prompt students to wash their hands one more time.
- Cut the breads into small pieces and invite students to try samples with the toppings provided.

After the activity

- Notice how children interact with the toppings and breads provided. Are some familiar to them? Are they excited or reticent to try something new? Are they

respectfully sharing and hearing each other's opinions about what they taste, even when they differ?

- Consider what information students shared, and what additional information they might need to access the next activities, in which they will learn about the role of yeast in making certain breads round and puffy. Is this a familiar idea to some of them, i.e. from experiences baking bread with family members, or a novel concept for most?
- Don't forget to sweep and wipe surfaces thoroughly, and find a new home for any leftover bread (your coworkers, the cafeteria compost bin), to avoid unwanted animal guests in your room.

Partnered reading activity: "What is Yeast?"

In this activity, students read a short text about yeast. They review the previous day's hypotheses and decide whether they will revise their guesses about what makes bread puffy.

Learning objectives.

- Students will understand that yeast, as a living thing, takes in nutrients and eliminates waste, even though we can't see it with the naked eye. See: NY Science Standards, 1.2a)
- Students will read and synthesize information gleaned from a short text, recounting the key details and explaining how they support the main idea. (CCSS.ELA-LITERACY.RI.3.2)

- Students will discuss hypotheses from their previous activity, asking (and answering) questions in writing and discussion to check understanding of information presented and linking their comments to the remarks of others. (CCSS.ELA-LITERACY.SL.3.1.C)

Ingredients.

- Appendix D: "What is Yeast?" Text & questions
- Chart and hypotheses from the previous activity

Instructions.

Before the activity:

- Create partnerships for students to read the text in pairs. (Consider pairing students heterogeneously, i.e., a stronger reader with a less strong reader, to support and challenge all students.)
- Print enough copies of the "What is Yeast?" text & questions set for all partnerships.

During the activity:

- Review hypotheses from the previous day.
- Introduce the purpose of the day's lesson:
 - *"You may remember that in America's Test Kitchen, the scientists and chefs do research first, to see what has been written about a topic, before*

they begin testing out recipes. Today we're going to read a little bit about bread, and look at our hypotheses, before we begin to experiment."

- Ask students to decide in their partnerships whether one student or both students will read the text aloud.
- Listen in as students read, noting where some may hesitate as they navigate unfamiliar vocabulary words. Support students in using context clues to determine the meaning of unfamiliar words, or provide them with a brief definition.
- After students read the text, invite them to answer the question set for the text together as a partnership. Monitor to ensure that both partners are working equally diligently, and together, to do so.
- Invite students to come back to the meeting area as a group, and to review their hypotheses (displayed on chart paper or SmartBoard document). Which hypotheses make sense based on this new information? Why? Do they have any new hypotheses to add?

After the activity:

- Consider if students were ready to think about the scientific and social studies concepts in this lesson. What might you do to supplement or build on what they already know, and seem ready to learn?

In the kitchen: making bread.

This hands-on activity teaches a life skill (baking bread) while inviting students to begin to integrate their academic learning with their cooking experiences. By making a

yeasted dough and a control dough without yeast, they may come to understand how bread is assembled from a set of basic ingredients common to many cultures (a social studies concept), and how it changes with the help of yeast (a scientific concept).

For this first kitchen activity, it may seem as though a great deal of preparation and time is involved. However, the routines and processes introduced here (i.e. recruiting volunteers, following recipes) will pave the way for future cooking activities to move in a more streamlined way, as students (and adults) become more accustomed to doing kitchen-based work together.

One timing piece of which teachers should be aware is the wait time after dough has been mixed and kneaded, as yeasted bread will take 30-60 minutes (depending on the type of yeast used) to change shape after it has been mixed. Thus, the activity must be done in two parts: one in which you create the dough, and one in which you measure and discuss it once the yeasted dough has risen. Accordingly, you may wish to do the first part of this activity in the morning and invite students to return to the dough in the afternoon to see how it has changed, or to store dough in the refrigerator overnight (where it will still rise, albeit more slowly) and revisit it in the morning.

Dough can also be frozen, after it has risen, in freezer-safe quart bags, for a week or more, for weekly classes. (It will not rise while frozen.) Be sure to place dough in the refrigerator to defrost a day before using, then move to a room-temperature spot before the lesson. You may also opt to make and freeze extra batches of dough with your class during this session or in subsequent cooking sessions, to use for future pizza-making.

Learning objectives.

- Students will notice how adding yeast to a dough, then letting it rise, can change its shape. (NY Science Standards, 3.1c, 3.2c).
- Students will use rulers to compare the width of their dough before and after resting/rising. (CCSS.MATH.CONTENT.3.MD.B.4)
- Students will understand how the temperature of water, and of an oven, can impact the function and taste of yeasted bread. (See: NY Science Standards, 3.2b)

Ingredients.

For the lesson

- Appendix E: Yeasted and unyeasted (control) bread dough recipes
- Rulers (to measure the bread)
- Camera to record the results
- SmartBoard, white board or chart paper for referring to recipes in class (paper copies may become quickly ingredient-spattered or become distracting)

For yeasted recipe

- 1 teaspoon dry yeast, dissolved in $\frac{1}{2}$ cup warm (not hot!) water
- $\frac{1}{4}$ teaspoon salt
- 1 $\frac{1}{2}$ cups flour, divided:
 - 1 $\frac{1}{4}$ cup for the dough
 - $\frac{1}{4}$ cup for covering the cutting board so the dough won't stick
- 2 tablespoons olive oil, divided:
 - 1 tbsp for making the dough

- 1 tbsp for brushing onto the flatbread before baking

For unyeasted (control) recipe

- ¼ teaspoon salt
- 1 ½ cups flour, divided
- 2 tablespoons olive oil, divided

Cooking materials

- Large bowl (for mixing)
- Measuring cups and spoons (for flour and salt)
- Liquid measuring cup (for yeast and oil)
- Wooden spoon (for stirring)
- Damp towel or plastic wrap (for covering dough)
- Cutting board (for kneading dough)
- Butter knife (for dividing dough)
- Plastic freezer bags (for freezing leftover dough)
- Rolling pin (for flattening dough)
- Oven

Instructions.

Before the activity:

- If you will be working with more than 4-8 students, consider recruiting volunteers (parents or fellow teachers) to assist with this lesson. (I find that the ideal ratio is 1 adult: 4 children, particularly since this also makes light work where dishes are concerned, but some groups may be more mature and able to handle themselves, and the dishes, without this number of adults supervising.)
- Review recipe & multiply quantities as necessary for the number of students in your class. (The recipes above each generate a ball of dough that can be cut into 6-8 “mini pizza” size pieces, generating a total of 12-16 samples. So, if you will have 24-32 students in your class, you will double the recipe.)
- Purchase, or ask parent volunteers to purchase, the necessary grocery ingredients.
- If time allows, make an additional batch for yourself at home. This is not required, but has a few benefits.
 - It will help you to test your recipe and anticipate students’ areas of confusion or questioning.
 - It will allow you to test your yeast (these typically come 3 to a set of packets) to make sure it will activate properly. (Dough may rise more slowly certain yeasts, while “instant” yeast produces a quicker, sourer bread.) This also allows you to note how long it takes for the dough to rise.
 - Pre-made dough can be refrigerated for a few days (leave plenty of room for it to expand in the bowl or lidded plastic container), or even frozen in quart bags and later defrosted, in case you would like to use dough again in another activity (i.e. pizza-making). Be sure to label bags with the date.

- Gather the materials and ingredients for bread-making, and place them where will be easily accessible to students in the kitchen area. (Note: before this, you will have decided whether you will pre-measure the ingredients first to save class time, or have students get their own materials and measure their ingredients, to teach into these skills. For tips on this, see previous section entitled “Creating a kitchen classroom.”)
- Create at least two groups beforehand: one to test the yeasted dough, and one to test the “control” dough. Consider using heterogeneous groupings, with students of differing abilities (so that students who may struggle to read recipes, to stay focused, or to touch the raw dough will be supported by peers who can help).
- Write out the recipes on the SmartBoard document, white board or chart paper for students’ reference.
- Print out clean copies of the recipe for students to place in their journals *after* the lesson. You may wish to print additional copies for students who may want to go home and try the recipe again with their families.
- To preview the kneading activity students will do in this lesson, you may wish to share this helpful video from *The Kitchn* (Durand, 2010) which demonstrates and discusses the motion of stretching the dough to elongate the gluten strands, making it easier for the yeast to inflate the dough and make it rise:

<http://www.thekitchn.com/home-hacks-108771>

During the activity: Part 1

- When students arrive, remind them of the purpose of this activity.

- *“Recently, we have been asking questions about why bread comes in different shapes. We have listed our guesses, called hypotheses. Today, we are going to try an experiment. Flour and water will be the constants in this experiment—the ingredients that stay the same for all breads. One group will also add a variable: yeast, the microorganism we read about together. Then we will see what happens and measure the results, to check our hypotheses about what makes breads change their shape.*
- Provide safety reminders related to the recipe. I.e.:
 - *“Always wash your hands before you cook. Keep your hands clean by avoiding touching your face, hair, shoes, or each other. Anything involving heat (such as putting dough in the oven to bake) requires an adult. We have tried to make sure we do not have any allergens in our class recipes, but sometimes mix-ups can happen, even at the factory where food is processed. If you or someone else is having trouble, tell a teacher.”*
- Talk through the recipe briefly:
 - *Today, you’ll mix together the ingredients for dough. Then you’ll knead the dough to stretch it out. (Refer to video above if necessary.) Then, you’ll set the doughs aside. Later, you’ll look to see if the doughs have changed at all. If they have changed, we’ll use rules to measure how much. Then we’ll bake them and notice if this also changes your dough.*
- Show the recipe’s ingredient list (i.e. on the SmartBoard). Tell students you will move through the cooking experience by either verbally instructing students step

by step (good for younger or less experienced children), or by talking through the recipe at the start of the activity, allowing them to get their own supplies and pace their own preparation (better for older children).

- Tell students to which group they will belong.
- At your discretion, you may choose to determine jobs, or ask students to determine jobs, for the following tasks (some jobs may be shared by more than 1 student):
 - *Recipe reader (for groups following their own recipe)*: reads the recipe aloud, sometimes multiple times, for group members.
 - *Ingredient and materials finder*: makes sure all of the necessary items are there.
 - *Ingredient measurer*: makes sure that all measurements are accurate.
 - *Ingredient tracker*: keeps track of which ingredients have been used and which have not.
 - *Ingredient stirrer*: combines all of the ingredients. (Often a popular job; can be shared by all students.)
 - Note: while older or more experienced young cooks can and should negotiate these roles together without adult intervention, younger or less experienced students may need you to assign, and then model, each of these jobs.
- Once students have shared their plans to split up the work, they can go to the supplies area to find their materials and their ingredients, using the ingredients list on the board.

- Teachers should circulate throughout the lesson to check that students are working safely and productively. Some may need help with kneading in particular, especially those with fine motor weakness.
- At the same time, teachers should avoid doing anything for the students that students are struggling to do, or stepping into simple interpersonal conflicts that students can resolve themselves. The goal is for students to feel some self-efficacy and to engage in the scientific process, not to create a perfect product.
- Once bread has been kneaded, place both the control dough and the yeasted dough in bowls. Ask the students to join you in the meeting area to observe the dough before it has time to rise.
- Show how you can use a ruler to measure the width of the dough ball. Record it on chart paper. (In Grade 3, the Common Core standards suggest that students “show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.” If students are ready to do so, you can invite them to use this strategy here.)
- Take a photo of both doughs next to the ruler.
- Tell students that you are going to set the dough aside for a set amount of time (in 30-60 minutes, they should see a change).

During the activity, Part 2 (30-60 min later, the next day, or the next week—see instructions above on dough storage)

- Set up a time or students to briefly revisit their dough, to measure it. They will likely notice that one dough has grown significantly larger!

- Take a photo of both doughs again, next to the ruler.
- Prompt students to notice and record the differences observed they see between the yeasted and unyeasted doughs, and between their initial set of measurements and the final set, after dough is risen. (If this is not feasible in any way, take a photo of the two doughs next to a ruler after yeasted dough has risen, to show students next time you meet.)
- Invite students to roll out the doughs on a floured surface and bake them on a baking sheet (see recipe for instructions).
- Again, compare the two doughs now that they are baked. Prompt students to notice:
 - How did the yeasted dough compare to the unyeasted dough when both were *uncooked*?
 - How did the yeasted dough compare to the unyeasted dough when both were *cooked*?
 - How did the cooked yeasted dough compare to the uncooked yeasted dough?
 - How did the cooked control dough compare to the uncooked control dough?
- Discuss as a group:
 - What did we learn from this activity?
 - What did we learn about our hypotheses? Have we proven or disproven our guesses?
 - What other questions do we have?

- What are some interesting, newly-proven facts we might tell our families tonight about bread?
- Divide baked bread into pieces and invite students to enjoy samples of the bread (with condiments from the previous activity, if available). Invite students to discuss which taste they prefer: yeasted or unyeasted bread.

Recipe recap.

In this activity, students will compose a journal entry, reflecting on their experience with bread. As such, it can be stored in their binders for future reference. This writing activity allows you to assess students' abilities to relay their learning in writing, as well as to assess their writing mechanics, which will become relevant later on, as they prepare a written recipe for publication.

As with any pre-assessment, the goal should be to see what students already know how to do as writers, not to measure their understanding of newly-taught writing techniques, or to teach them new skills with this exercise. (The opportunity to address the latter will come later, during the revision, editing and writing conference activities.)

In my experience, some students are able to write easily about a topic, with very little prompting. Others may struggle to get started or to organize their thinking. Thus, I have included a journaling response form that offers some opportunity for differentiation, giving students the ability to choose the prompt(s) to which they feel most able to respond, and teachers the ability to assign additional prompts to students who write more quickly. (See Appendix E.)

Learning objectives.

- Students will write informative/explanatory texts to examine the topic of dough. (CCSS.ELA-LITERACY.W.3.2)
- With guidance and support from adults, students will produce writing in which the development and organization are appropriate for the task of relaying their learning from the kitchen lesson on bread (CCSS.ELA-LITERACY.W.3.4)

Ingredients.

- Appendix F: bread recipe recap
- Pencils

Instructions.

Before the activity

- Print and hole-punch copies of Appendix F (Bread recipe recap) for each student.

During the activity

- Review your findings from the bread activity, including:
 - The question (*Why do breads have different shapes?*)
 - Students' various hypotheses (*Some breads have eggs, some don't; some breads use yeast, some don't*)
 - The experiment (a control dough and a dough with yeast)
 - The conclusion (yeasted doughs rise in measurable ways; un-yeasted doughs don't rise as much)

- Explain to students that after scientists do experiments, they often write about the experience in their journals so they can remember what they did. They also write down any questions they still have, for future experiments.
- Ask students to turn & talk in preparation for writing: what have you learned so far about bread?
- Hand out copies of Appendix F (bread recipe recap) and invite students to write for a set time period (i.e. 15min for 3rd graders, 20-30 for 4th graders, 45 for 5th graders, as is age appropriate). During this time, students can plan and draft responses, or ask for help, but they may not interrupt other students.
- If necessary, provide an additional challenge for early finishers by pushing them to answer more than three prompts, and to use both back & front in their responses.
- Review any existing expectations for your group of writers as necessary, i.e.:
 - The definition of a complete sentence, and your expectations for writing mechanics when writing sentences (i.e. capital letters to start, punctuation to end).
 - Additional expectations with which they may be familiar in your classroom—i.e., to organize their thoughts into an indented paragraph, or to check their spelling using a spelling dictionary or word wall.
- If some students seem to have trouble getting started, ask them to quietly conference with you about what they remember. Then help them to select the prompts that best match up with the experience they describe, and allow them time to answer.

- As students begin to finish, invite them to the meeting area. Invite 2-3 volunteers to share their responses.

After the activity

- Teachers should confer or reflect individually to determine how future lessons can be adapted based on students' approaches to this assessment. I.e.
 - For students or groups who have trouble getting started, teachers can introduce brainstorming techniques before writing such as talking to a friend or making a mind map.
 - For students or groups who finish quickly, teachers can plan to include additional challenges or activities for them to engage in (i.e., browsing the food library) while others finish.
 - For students or groups that incorrectly use or confuse terminology from this lesson, or appear to be confused about the facts gleaned from experiments, you may choose to follow up and clarify.
 - Note if students share any additional questions from this experiment, and consider finding ways to answer them as you move through the unit.

Sharing student learning with a wider audience.

If you have a place in your room, or on your classroom blog, where you share student observations and discoveries during the learning process, this is a good juncture to stop and select some work to share. Some ideas:

- Select some student work from this recap activity, and consult students to get their permission to share their “work in progress.”
- Pair student work with the photos you have taken along the way to show the development of their ideas, from the initial bread sort to the final cooking activity.
- Invite students to create captions for the photos.

Suggested read-aloud: Everybody Cooks Rice, by Norah Dooley (1991)

As students conclude their work with bread-based science, this is a good opportunity to bring the focus back to social studies, and to help them generalize what they have learned about staple foods. Students should understand that there are many other staple foods besides bread that create points of commonality across cultures (i.e. corn, tubers such as cassava and potato, and rice), though each culture, family, and individual will have unique ways of using these foods. (They will continue to investigate these concepts with sauce in the next series of activities.)

This read-aloud book explores this theme of “same but different” with rice as a focus. In *Everybody Cooks Rice*, a pair of Italian children visit different people in their neighborhood and find that each family is cooking a different kind of rice. The children visit families hailing from Barbados (rice and black-eyed peas), Puerto Rice (rice with turmeric), Vietnam (fried rice with peas and nuoc cham), India (biryani), China (white rice with wok-fried vegetables and tofu), Haiti (rice with peppers, chives, and red beans), then come home to their own Italian dinner of “*risi e bisi*—rice with green peas.” The

illustrations in the book cast every character's skin in a yellowish tone. The book includes recipes for each dish that children can make with a grown-up's help.

In addition to being a good read-aloud choice, this book can also serve as a mentor text for creating a class book, in which every student describes a rice or bread dish (or a dish related to another common food in the classroom) and a scene in which they might eat it with their families. In my experience, young children enjoy books like this and return to them again and again.

Exploring the world of flavors.

In this activity, which kicks off the next series of lessons on flavors, students play a version of “Commonalities” (previously outlined in section entitled “Community Building Activities”). Here, students survey peers about favorite foods. They will use their survey results to create categories for sorting foods by taste, later using these categories and preferences to drive the creation of initial hypotheses about the nature of food preferences.

Learning objectives.

- Students will work together with partners to ask and answer questions via surveys. (CCSS.ELA-LITERACY.SL.3.1)
- Students will ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (CCSS.ELA-LITERACY.SL.3.3)
 - Students will sort their survey data into categories based on questions posed by the teacher.

- Students will analyze survey data and generate hypotheses in response to the question, “Does everybody like the same flavors?”

Ingredients.

- Questions for every partnership or group
- Clipboards
- Papers with questions for students to ask, with room for students to record
- A place to record favorite foods, in a way that allows the food names to be moved around and categorized (i.e. Post-It notes or 3 x 5 cards that can be moved around on a table or poster, or a SmartBoard document in which text can be moved by touch)
- A camera to record the results of student sorts
- A place to write the question related to this investigation (“Does everybody like the same flavors?”) and initial student hypotheses, i.e. a SmartBoard document or chart paper

Instructions.

Before the activity

- Teachers write 3-4 food-related questions, each on their own separate pieces of paper, and attach them to clipboards. Questions should elicit a range of taste responses (both sweet and savory), in order to show the variation of taste preferences in the room. Questions that would work well include:
 - What’s your favorite food to eat for breakfast?

- What's your favorite food to eat for lunch at school?
- What's your favorite food to eat for dinner with your family?
- What's your favorite Thanksgiving food?
- What's your favorite sandwich topping?
- What's your favorite pizza topping?
- Teachers should create partnerships or groups (depending on how many students are in the room) and assign questions accordingly.
 - Example: if there are 8 students, write 4 questions for partnerships.
Students can circulate; one partner can ask the questions, while the other takes notes.
 - If there are 28 students, write 4 questions and hand one to each group of 7 students. One writer can compile a list of answers to the question as group members respond.

During the activity

- Students draw questions at random from a container & go around gathering answers on a sheet. (Name--Answer, i.e. Ryan--Loves eggs & toast) They are "done" when they have gathered 2-4 answers for each question (teachers can decide based on how much time is available and how many partnerships need to have questions).
- When all students have tabulated their results (this may take a while!), they can come together again in a circle.

- Use the results to generate a list of foods enjoyed by class members. Write them on Post-It notes, 3 x 5 cards, or in movable boxes in SmartBoard document so that students can categorize them afterwards.

Example list (smaller group)

In our classroom, we like to eat...

- Hot dogs
- French fries
- Chocolate ice cream
- Red velvet cupcakes
- Sushi
- Brownies
- Mac & cheese
- Fried chicken
- Oxtail
- Curry goat
- Pumpkin pie
- Scrambled eggs
- Pepperoni

- Next, ask students to turn & talk: do all these foods taste the same, or do they have many different tastes? (Likely, the answer will be “many different tastes.”)

Why do you think so?

- As a group, ask students to decide how they would group or categorize these dishes. Once they decide on a category, ask them to move the names of the foods and sort them.
- Note how many foods are in each category.
- Take a picture of the initial sort.

Example initial sort

In our classroom, we like to eat...

Dessert foods

Dinner foods

- Chocolate ice cream
- Red velvet cupcakes
- Brownies
- Pumpkin pie

Total: 4 foods

- Hot dogs
- French fries
- Sushi
- Mac & cheese
- Fried chicken
- Oxtail
- Curry goat
- Scrambled eggs
- Pepperoni

Total: 9 foods

- If time allows, invite students to try sorting the foods in other ways. Note the language and categories students use to organize the dishes.
- Ask students to come together in the meeting area and consider this question, written on a SmartBoard document or chart paper: “Does everybody like the same flavors?”
- Invite students to use the categories they’ve created to think about this question (they may also turn & talk to a partner here).
- Invite students to think about a hypothesis (or a few) based on the evidence from this survey. I.e.
 - *Lots of kids we know like dessert best, but in our classroom, more people like dinner foods. So I hypothesize that people don’t always like the same thing.*
 - *Some desserts have dinner flavors, like salty chocolate brownies, and some dinner foods have some sweet flavors, like pepperoni. So I hypothesize that people like the same flavors, just in different foods.*

- Invite students to think about ways in which they might test their ideas.
- Tell students they will continue investigating their hypotheses in the coming activities.

After the activity

- Teachers should confer or reflect individually to determine how future lessons can be adapted based on students' approaches to this activity. I.e.:
 - What kinds of language were students using to describe the flavors of their favorite foods?
 - What may they need to know before reading the text in the next section, which introduces the terms “sweet” “salty,” “sour,” “bitter” and “umami”?
 - What types of food seem to be most popular? Are there any majorities in favor of certain flavors or dishes? Are there any outliers who may feel self-conscious about their unique preferences? (See “Findings” for the ways this issue emerged in my setting as one I needed to consider more carefully.)

Jigsaw readings: Flavor science.

Students will re-examine their hypotheses from the previous activity after engaging in shared research during this activity. Students will compare and contrast two texts on the same topic: the science of flavor. This format is called a “jigsaw” because each group will have a different piece of the puzzle.

The first text (Appendix G) is entitled “What are taste buds?” It explains the mechanics of how the body receives taste (through tongue and nose). The second text (Appendix H), which is slightly longer and more complex, is entitled “The science of flavor.” It explains the mechanics of how chemicals send messages to the tongue and nose to produce different flavors (sweet, sour, etc.) and why our bodies seek out ingredients with these flavors based on their biological needs. It also explains the fascinating concept of *umami*, a recently-discovered “fifth flavor” (which may be as unfamiliar to some adults as it is to children).

Learning objectives.

- Students will engage in collaborative discussions in groups. (CCSS.ELA-LITERACY.SL.3.1)
- Students will compare and contrast the most important points and key details presented in two texts on the same topic: the science of taste (CCSS.ELA-LITERACY.RI.3.9)
- Students will create posters that summarize the key points of their respective texts. (CCSS.ELA-LITERACY.W.3.2)

Ingredients.

- Appendices G & H
- Butcher or chart paper for students to capture ideas on posters
- Markers

Instructions.

Before the activity:

- Create two groups. Consider grouping students based on which text will be most appropriate for their reading/comprehension/attention level. (Text 1 is shorter and simpler than Text 2.)
- If necessary, adapt texts for your group of learners.
- Print and hole-punch copies of both texts for students to place in their binders.

During the activity:

- Review the question from the previous activity: *Does everybody like the same flavors?*
- Review hypotheses from the previous activity.
- Explain to students that in today's research, they will learn more about the science behind taste, and learn more about the five flavors our tongues can taste. They will then have the opportunity to change or add on to their hypotheses.
- Explain that after reading, students will be responsible for creating visually interesting posters that summarize the main points that their peers need to know about the science of taste, for the purposes of answering the question of the day. They will then be responsible for presenting the information in an engaging way.
- You may suggest that students assign jobs: i.e. a text reader, a note-taker, a poster designer, and a presenter.
- Provide 5-10 minutes for students to read the text as a group.

- Provide 10-15 minutes for the group to design their poster.
- Bring students together in the meeting area. Provide 10-15 minutes for them to present their posters and to take questions.
- Ask students to review their hypotheses. Does this new information confirm or call into question their ideas from the previous session? Help them to add on or or revise as necessary.

After the activity:

- Find a place for the posters to hang in the room, so that students can refer to them in the next activity.
- Teachers should confer or reflect individually to determine how future lessons can be adapted based on students' approaches to this activity. I.e.:
 - Did students highlight key points from the texts, or did they pick and choose non-salient details? Is any clarification of terms or ideas necessary before students move on?
 - Did students enjoy and understand the texts? Did they feel like the right length and level to challenge most group members?
 - Did students all work equally to complete the task, or did it feel lopsided, with some students doing more of the work and some doing less? If so, how might you address this with the next group project?

Suggested read-aloud: Amelia's Notebook by Marissa Moss (2011)

Amelia writes (and often complains colorfully) about her everyday experiences, which often include food. (The protagonists in this book, and others in the series to which it belongs, are primarily White.) Her inventive, creative, and highly subjective scribbles can serve as mentor texts for readers who are beginning to keep a journal of their eating and cooking experiences, as Amelia's writing shows that colorful, adjective-laden writing, funny drawings and captions are all fair game when writing about food.

Five flavor taste test.

In this kitchen-based activity, students will taste differently-flavored samples representing the five major flavors (sweet, salty, sour, bitter and umami).

A basic tomato sauce serves as the constant here, while common condiments can be added as variables to help students see how each one modifies the taste overall. (See suggestions for condiments below.)

If a significant number of students in your class are allergic (or simply strongly averse) to tomato sauce as a base for this recipe, alternative sauce options can include a simplified romesco (in which boiled mashed carrot is the base), or nut-free pesto (made by blending basil, olive oil and sunflower seeds).

As students taste each sample, they will record their preferences and notes on a recording sheet (see Appendix I). The recording sheet includes ways for students to respond both quantitatively (circling their reaction on a 5-point scale, choosing a favorite) and qualitatively (jotting down as little or as much additional information as they wish). This reinforces the idea that both scientists often take notes on experiments, a form of nonfiction writing, to remember their procedures and reflect on them.

The information students glean from this hands-on investigation will help them to answer the question: *Does everybody like the same flavors?* It will also help them to develop their own recipes for tomato sauce.

Learning objectives.

- Students will sample different variations on tomato sauce to discover whether all classmates prefer the same flavors, or whether different people prefer different flavors. (NY Science Standard M3.1)
- Students will use the scientific method in to investigate a hypothesis. (CCSS.ELA-LITERACY.RI.3.3; NY Science Standards, S1.1)
- Students will use a recording sheet to observe and note their own taste preferences. (CCSS.ELA-LITERACY.W.3.2, NY Science Standard S1.1a)
- Students will refer to science-specific concepts and vocabulary terms such as *hypothesis*, *variables* and *constants*. (CCSS.ELA-LITERACY.RI.3.4)

Ingredients.

For the lesson:

- Appendix I: Taste test recording sheet

For the sauce:

- Can opener
- Small sample cups or shallow prep bowls for condiments (if desired)
- Six cups, bowls or jars for sauce

- Masking tape for labeling sauce containers
- Sharpie or marker for labeling
- Pitcher of water and drinking cups
- 1 28oz can of peeled whole tomatoes per 4 students (ensure they have no added flavors, like basil or garlic)
- Immersion blender or potato masher
- Condiments to represent the five flavors:
 - Sweet: honey or maple syrup
 - Sour: balsamic vinegar or lemon juice
 - Salty: sea salt, soy sauce, wheat-free tamari, or soy-free coconut aminos (depending on allergies)
 - Bitter: tomato paste, Vegemite
 - Umami: Parmesan cheese, fish sauce, miso, dried shiitake mushrooms rehydrated in liquid, or soy-free chickpea miso (depending on allergies)
- Bread, cut into cubes (enough so that each student has 6 pieces), to facilitate taste-testing

Instructions.

Before the activity:

- Check with students to determine if most or all students will be able to eat tomato sauce as a base for this experiment. (If not, consider using boiled mashed carrots instead.) Check also for common allergies like soy and gluten before including condiments in the experiment. (I.e., soy sauce has both soy and gluten.)

- Consider recruiting additional adults to help prepare, manage and clean up for the kitchen activity.
- Use an immersion blender or potato masher to crush the peeled tomatoes inside the can.
- Create 6 solutions: one with tomato and a touch of salt, one with tomato and sugar, and so on.
- Be sure to leave the last container plain (just tomato) as a control group.
- Note: you may opt to add a splash of olive oil to all containers to improve taste and texture.
- Set the 6 solutions around the room so that students can split into groups and rotate between them.
- Label them simply 1, 2, 3, 4, 5, and 6 (don't use the flavor words). Be sure to write down their corresponding flavors for yourself, somewhere where students cannot see it, so you can tabulate results (i.e. if the tomato sauce with added sugar is solution #1, and #1 gets 6 votes, you will need to note in the next activity that it was the *sweet* tomato sauce that got 6 votes.)
- Set out paper towels or small paper plates with 6 cubes of bread apiece near the tables—one for each student.
- If possible, set out pitchers of water with drinking cups for students to sip between samples.

During the activity:

- Gather students in the kitchen area. Provide safety reminders:

- Remember to wash hands.
- No double-dipping. Once bread is dipped into the sample and goes into your mouth, it doesn't go back into the sample.
- Take small bites, then chew and swallow calmly.
- As we try different flavors, do not yuck another student's yum.
- Keep bodies calm in the kitchen area.
- Introduce the activity to students:
 - *“Recently, we have been investigating the question: Does everybody like the same flavors? Today, you will try an experiment with six variables to determine whether everyone in our class likes the same flavors best, or if we like a variety of flavors. The constant will be tomato sauce. The variables will include five mystery ingredients, each representing the different tastes our tongue can measure, including sweet, sour, salty, bitter and umami. There will also be one “control” group—a container with only plain tomato sauce and olive oil. Your job will be to decide which flavor of tomato sauce you like best. Scientists do taste tests like this, called ‘blind’ taste tests, without labels, so that you don’t decide that you dislike the taste of something based on its name. Sometimes they will even change the color of a food so every sample is the same color. You will sample each flavor by dipping pieces of bread into containers marked with numbers. You will note which ones you liked and did not like on a 5 point scale.”*

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- Tell students that they can also jot down notes as they go, answering questions like:
 - What sensory words (i.e. describing taste or smell) could you use to describe these flavors?
 - What feeling words (i.e. happy, upset) could you use to describe how you feel about these flavors?
 - What other foods does this taste remind you of?
- Finally, tell students that in the end, they will rank the flavors in order, choosing one as their #1 favorite.
- Tell students that during taste tests, it is best if the testers remain as silent as possible, and avoid comparing their answers with other testers. This way, the science experiment gives accurate results about the taster's own preferences, not anyone else's.
- Leave time for questions.
- Have students count off 1-6. Assign them a starting station (some will start with sweet, others with salty, and so on.) They can take their recording sheets as they head to their starting stations. Instruct them to move clockwise throughout the room at intervals, marked by your signal (i.e. a chime, a clap).
- Ensure that students have time to sample, to take notes, and to sip water between samples. If students attempt to talk to each other in a way that might influence other students' responses, or to respond strongly ("Ew!" or "Yum!"), gently remind them that they are scientists conducting an important experiment.

- When students are finished, allow them to return to their seats to finalize any notes they feel they need to take. If some students need to return to certain stations to taste again and add on to their notes, you may permit them to do so at your discretion (and as available bread supply allows).
- Ask students to vote on their preferred sauce flavor by circling the number of their favorite sample at the end of the survey.
- Ask students to hand in their recording sheets so that you can tally the results.

After the activity

- Tally up the results by consulting your notes (I.e. if 4 students selected Container 2 as their favorite, containing the sour variable, note that sour received 4 votes).
- Create a simple table for students to review the results (either on a large piece of chart paper, or on a SmartBoard document).

Example

Sweet	Salty	Sour	Bitter	Umami	Control (no added flavor)
3	2	4	1	1	1

- Teachers should confer or reflect individually to determine how future lessons can be adapted based on students' approaches to this activity. I.e.:
 - Did all students try all flavors?
 - Did some students seem nervous about trying the labeled solutions without knowing what was in them?

- Did some students find it difficult to distinguish one container from another?
- Did some students struggle to retrieve words to describe the samples, or to decide on their opinion?
- How might this inform future cooking and writing sessions?

Analyzing experiment results with a bar graph.

In this activity, students use the results from the taste test to create a simple bar graph representing their findings. They will combine the results with an explanation of their scientific experiment. Creating posters in groups will give them an opportunity to express and to share their new understandings.

Learning objectives.

- Students will work together in groups to discuss and express information collected via the previous experiment. (CCSS.ELA-LITERACY.SL.3.1, CCSS.ELA-LITERACY.W.3.2)
- Students will refer to science-specific concepts and vocabulary terms such as *hypothesis*, *variables* and *constants*. (CCSS.ELA-LITERACY.RI.3.4)
- Students will generate and analyze a bar graph representing favorite flavors from the blind taste test in the previous activity. (CCSS.MATH.CONTENT.3.MD.B.3)
- Students will analyze information gathered via experiments to answer the question: “Does everybody like the same flavors?” (CCSS.ELA-LITERACY.SL.3.3; NY Science Standards, S1.1)

Ingredients.

- Simple table with experiment results tabulated as described above, in a table (either on a large piece of chart paper, or on a SmartBoard document)
- Chart paper or SmartBoard document for recording student conclusions
- Large sheets of paper or poster-size paper for students to generate their own posters, with graphs
- Markers for drawing posters
- Optional: Post-its for using as squares to represent votes (this may be easier for some students than drawing perfect squares in a bar graph)

Instructions.

Before the lesson

- Prepare the data so that students can see it.
- Place poster supplies around the room.
- Create groups for creating posters.

During the lesson

- In the meeting area, review the question from the previous activity:
 - *“Our tongues can taste five major tastes: sweet, salty, sour, bitter, and umami. Here is our question: Does everybody like the same flavors? We did an experiment to find out. Now we have the results.”*
- Show students the results of the table.

Example

Sweet	Salty	Sour	Bitter	Umami	Control (no added flavor)
3	2	4	1	1	1

- Invite students to turn and talk to each other to decide what they think about the results as they pertain to the question.
- Ask students to offer their thoughts. Tell them that when scientists think they have the answer to their question based on their experiments, their ideas are called conclusions. If they have further questions, they keep track of those too, in case they need to do more experiments to feel sure.
- Record student conclusions and questions as they offer them. It is all right if students' conclusions contradict one another, so long as they are equally well-supported by the evidence.

Example

<p>Conclusions</p> <ul style="list-style-type: none"> - <i>These results prove that the answer to our question is NO. Different people like different things.</i> - <i>People like different things, but some flavors are more popular than others. So you could still say 'Most people like sour flavors.'</i> 	<p>Further questions</p> <ul style="list-style-type: none"> - <i>This experiment shows what children like, but I wonder if adults would say the same things?</i> - <i>This experiment shows what people in our class like, but I wonder if a different class might say something different?</i> - <i>Do we just like sweet or salty flavors because we're used to them? Would people in places where bitter or umami foods are</i>
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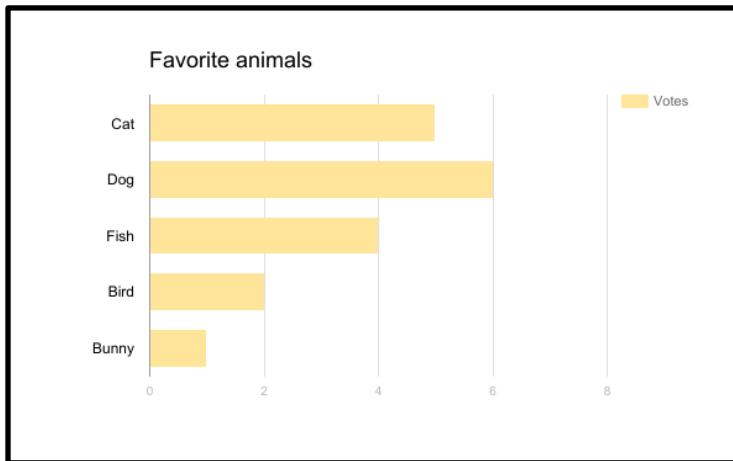
	<i>more common like those better?</i>
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- Instruct students to use this information to create posters in groups. Groups must do the following:
 - Create a title for the poster
 - Write the question investigated: “Does everyone like the same flavors?”
 - Describe or draw a picture of the experiment.
 - Represent the results of the experiment in a bar graph.
 - Write their conclusions, in their own words.
- If students do not have familiarity with bar graphs, you may do a simple model for them. I.e., you may show a sample graph with five potential favorite pets, to demonstrate that this process can be generalized to other topics and questions.
(Your table may or may not be based on preferences in the classroom.)

Example table

	Votes
Cat	5
Dog	6
Fish	4
Bird	2
Bunny	1

Example bar graph



- Students can also use computer programs to create the graphs (i.e. Google Docs).
- Provide time for students to create a draft of their posters if possible. Then provide a larger piece of paper for their final draft.
- When posters are done (this may take more than one working session), invite students to share their posters with peers via a silent gallery walk:
 - Hang the posters.
 - Put a pad of Post-it notes next to each poster.
 - Each group should start with another group's poster. Each student at the poster should provide 1 compliment and 1 question on a Post-It.
 - Groups can circulate again, with additional (optional) comments and questions added by peers.
- Groups may take time to address feedback on the Post-Its before hanging the posters more permanently in the classroom or in the hall.
- Come together and reflect on the connection between science, social studies and ethics: if people have different tastes, then how should we respect each other's different tastes and preferences? (You may opt to have students write on this topic in their journals, or simply share verbally.)

- **Optional extension:** Ask students to craft, then solve, one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. I.e.:
 - *How many more people liked the sweet sauce than the bitter sauce? How many less votes did the umami sauce get compared with sour sauce?*

Example poster

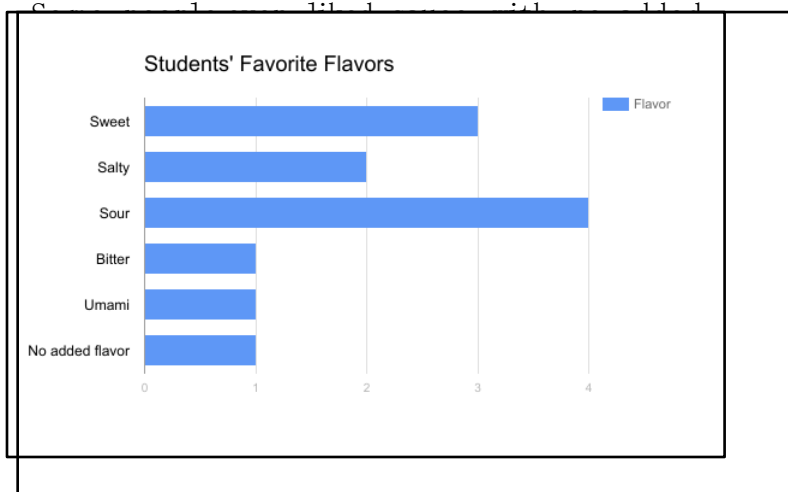
Our Flavor Experiment

Our question: "Do all people like the same foods, or do **different** people like different foods?" What we did: We tried different flavors of to mato sauce. The flavors were:

- ★ Sweet
- ★ Salty
- ★ Sour
- ★ Bitter
- ★ Umami

We also tried a control sauce with just to mato.

Conclusion: Different people like different things. Sweet was the most popular flavor.



Developing your own “special sauce.”

In this activity, students will use the information gleaned about their own preferences to create a custom-designed sauce for their unique palates. Here again, you may wish to provide alternative sauce options alongside tomato, such as the aforementioned simplified romesco (in which boiled mashed carrot is the base), or nut-free pesto (made by blending basil, olive oil and sunflower seeds). Students can still use the add-ins you provide for tomato sauce, such as lemon, salt, and even anchovy, to flavor these alternative sauces as they like.

Students can use the teaspoon as their general unit of measurement here, adding vinegar a teaspoon at a time to their cup of sauce, to taste. Alternatively, for students already familiar with basic fractions, teachers may choose to add additional layers of complexity, i.e. asking students to use $\frac{1}{2}$ teaspoon or $\frac{1}{4}$ teaspoon as their base unit of measurement.

As students develop their sauces based on their notes from the taste test, with sweet tooth students adding sugar to their sauces and sour-loving students going heavy on the vinegar, they will take careful notes using a recipe recording sheet (Appendix J).

These notes will support their writing of a “special sauce” recipe later on. (Teachers should also plan to document this process via photos and/or video, to support students’ own notes and memories about the experiences.)

As time and budget allows, students can use their sauce to top their own personal pizzas, using dough created in the previous kitchen activity. They can also top the sauce with a cheese of their choice.

Learning objectives.

- Students will use data gathered from their taste-testing experiment to problem-solve, creating their own “special sauces” that are optimized for their taste preferences. (CCSS.ELA-LITERACY.W.3.4, 3.5; NY Science Standard M3.1)
- Students will record the steps they take, creating drafts for recipes that they will later revise and edit for publication. (NY Science Standard S1.1a)

Ingredients.

For the lesson:

- Appendix J: Recipe recording sheet
- Appendix K: Tomato sauce, two ways (for students to take home)
- Clipboards
- Camera

For the taste testing:

- 1 28oz can of peeled whole tomatoes per 4 students (ensure they have no added flavors, like basil or garlic)
- Olive oil
- Condiments to represent the five flavors:
 - Sweet: honey or maple syrup
 - Sour: balsamic vinegar or lemon juice
 - Salty: sea salt, soy sauce, wheat-free tamari, or soy-free coconut aminos (depending on allergies); dissolving salty ingredients first in a water solution, or cautioning students to add a pinch at a time, can prevent avoid over-salting.
 - Bitter: tomato paste, Vegemite
 - Umami: Parmesan cheese, fish sauce, miso, dried shiitake mushrooms rehydrated in liquid, or soy-free chickpea miso (depending on allergies)
 - Optional: a spicy option, such as Tabasco or sriracha
- Small sample cups or shallow prep bowls for condiments
- Deep cups or bowls for students to make their own sauce (1 per student)
- Spoons or bread pieces for tasting
- 1 teaspoon for measurement (1-4 per group); smaller spoons if desired
- Masking tape for labeling sauce containers
- Sharpie or marker for labeling
- Pitcher of water and drinking cups
- Pencils

Before the activity

- Print out a copy of Appendix J for each student to use in this activity.
- Print out a copy of Appendix K for each student to take home.
- Create centers where groups of 1-4 students can congregate around the condiments. At each center, place:
 - Enough condiments so that each student can add all 5 flavors if desired (you can split them into labeled jars or cups if need be)
 - A teaspoon for measurement (1-4 per table, as your supplies allow)
 - A station for each child with the necessary supplies:
 - Place 1 peeled tomato in each student's bowl.
 - Place 1 spoon in each bowl (they will use this to crush the tomato themselves, and can also use it for stirring)
 - Place 1 recipe recording sheet nearby for each child (can be attached to a clipboard, with a pencil, for easy note-taking).
- If possible, set out pitchers of water with drinking cups for students to sip between samples.

During the activity

- Gather students in the kitchen area. Provide safety reminders:
 - Remember to wash hands.
 - If you place anything in your mouth, do not place it back into a shared container of food.

- Take small bites of all new foods and flavors, then chew and swallow calmly.
- As we try different flavors, do not yuck another student's yum.
- Keep bodies calm in the kitchen area.
- Introduce the activity:
 - *“Today, you are going to use the results from your experiments to develop your own recipes, just like the scientists and cooks at America's Test Kitchen. You will start with the same base--tomatoes--and then add variables. You are going to add 1 variable at a time, 1 teaspoon at a time, then taste test to see if you like it. You can add the following ingredients:*
 - *Olive oil*
 - *A sweet add-in*
 - *A salty add-in*
 - *A sour add-in*
 - *A bitter add-in*
 - *An umami add-in*
 - *Optional: a spicy option!”*
- Group students so that there are an equal number of students per center.
- As students add each element, they can taste test their sauce. Caution them not to share spoons or to place spoons in the condiment containers.
- As students add each element, they should record their recipe using the recording sheet.

- Teachers should circulate and take pictures of the process if possible, to help students as they write their recipes later.
- As students finish up their sauces, they can be invited to give their sauce a name.
- As students conclude their testing, 2-3 students can be invited to share their steps, their sauce name, and possible uses for their sauce (on eggs? On pasta? The sky's the limit!).
- Students should help to clean up the space.
- Prompt students to try these experiments again at home. Instructions are included in Appendix K: "Tomato Sauce, Two Ways."

If time allows:

- Students can spread their sauces on pizza dough (made again, or saved from the previous bread activity), or on bagels, English muffins or rolls.
- Students can add different cheeses to their sauce: if they know they enjoy umami, they can add more Parmesan, whereas if they know they enjoy sweet and salty flavors, they may prefer shredded mozzarella.
- If there is an oven available, students can toast or bake their personal pizzas.
- Students can record these steps on their recording sheet to expand their sauce recipe into a custom pizza recipe.

If students must move on to another activity:

- Sauces can be sampled immediately with additional bread strips.

- Sauces can be taken home in to-go containers.
- Sauces can be frozen (up to several weeks) in plastic cups or silicone cupcake containers, labeled, then placed in the freezer. They can use these sauces in later cooking activities.

After the activity

- Students should hand in their recipe notes to keep them safe for the following activity, in which they will finalize their written recipes.
- Teachers should review the notes to see what students were able to record. (For some, alternating between testing and writing might have been a challenge.)
- Students who did not accurately record their steps, or who inaccurately recorded their steps (i.e. writing tablespoons vs. teaspoons), can be asked to review their notes, and/or in some cases, to try the testing again at home if possible, using Appendix K.

Sharing student learning with a wider audience.

If you have a place in your room, or on your classroom blog, where you share student observations and discoveries during the learning process, this is another good juncture to stop and select some work to share. Some ideas:

- Feature the results of the “Commonalities” activity, showing students’ favorite dishes in class.
- Feature posters with the investigation question (“Does everybody like the same flavors?”), or photos of the posters.

- Feature photos of students using their research to design their own recipes.
- Invite students to create captions for the photos.

A recipe for a recipe.

This integrated reading and writing activity may take place over several sessions. Students will first analyze the recipes they have used as mentor texts, and use them to generate ideas for the structure and technique recipe writers use. They will apply these ideas as they write their own recipes for the sauces they created in the previous activity. Rather than following someone else’s instructions, they will now be *writing* them—a thrilling concept for many children in this age group.

Learning objectives.

- Students will read and analyze the structure and sequence of written recipes, which typically include a paragraph of introduction, a list of materials/ingredients, and a list of instructions. They will describe the logical connection between these sections. (CCSS.ELA-LITERACY.RI.3.8)
- Students will compare and contrast the most important points and key details presented in two recipes, to determine the similarities and differences in their text structure and purpose. (CCSS.ELA-LITERACY.RI.3.9)
- With guidance and support from peers and adults, students will develop and strengthen their own writing as needed by planning, revising, and editing. (CCSS.ELA-LITERACY.W.3.5)

Ingredients.

- Mentor texts for recipes
 - Appendix E (yeasted bread recipes)
 - Appendix K (tomato sauce recipe)
- Simple 2-circle Venn diagrams, drawn on large poster paper or printed on 8 x 11” paper
- Smartboard document or chart paper for capturing student ideas following the reading activity

Instructions.

Before the activity:

- Create partnerships or groups for students for examining mentor texts.
- Print enough copies of both mentor texts.
- Create posters or 8 x 11” papers with 2-circle Venn diagrams, for comparing and contrasting mentor texts.

During the activity:

- In the meeting area, introduce the activity:
 - *“Today, we are going to look at two recipes and figure out what they have in common in terms of the way they are written, and what differences we might see from recipe to recipe. We are going to chart what we notice using a Venn diagram. This is going to help us figure out how writers write recipes. It will help us see what we need to include in every recipe,*

and what might change from recipe to recipe and writer to writer. After we're finished reading the recipes and making our posters, we're going to write a 'recipe for a recipe': a list of things that we need to remember as writers when we're writing our own recipes."

- Using the two recipes used in class, students can be asked to work in groups, generating Venn diagrams listing features of both recipes, noting similarities and differences.
- *Similarities:* Ideally, students should notice that both recipes contain the following features typical of most recipes:
 - A paragraph of introduction
 - A list of materials/ingredients
 - A list of instructions
- Students may also notice more granular features of the text, i.e.:
 - The introduction is a full paragraph
 - The introduction includes fun facts
 - The ingredients and materials appear as separate, bulleted lists
 - The instructions appear as numbered steps
 - The introduction includes an introductory sentence
 - The introduction lists supporting details connected by linking words
 - The introduction includes a conclusion
 - Ingredients and materials are listed separately
 - The list of ingredients is organized into bullets

- *Differences:* Ideally, students should notice that the contents of the recipes—what they talk about, the ingredients and steps listed—differ based on the food that is being cooked. They might notice also notice that:
 - The introductions are different lengths
 - The introductions have different main ideas, i.e.
 - Bread recipe main ideas: There are many different kinds of breads. This recipe helps you to make a very common type.
 - Sauce recipe main ideas: Tomato sauce is what turns bread into pizza. There are many different ways to make tomato sauce.
 - In the bread recipes, there are a lot of steps, so the writer organizes them into sections
 - In the sauce recipe, there are two ways to make the sauce, so the writer organizes the steps into two sections based on the reader’s preferences
- After students have had time to create their initial Venn diagrams, they can reconvene in the meeting area to share what they noticed.
- Then, students can talk about what a ‘recipe for a recipe’ might look like. Teachers can help to organize their ideas using a Smartboard document or chart paper. They can write a simple introduction that explains what a recipe is and what it helps the reader to do. Their list of similarities can become a list of “ingredients”: things that every recipe needs. Their list of differences can become a list of “optional toppings”: unique choices writers can make.

Example “recipe for a recipe”

HOW TO WRITE A RECIPE

Recipes help you to make something new.

Recipes can be long or short. They can be complicated or simple. But they all have a few main ingredients.

INGREDIENTS (THINGS MOST RECIPES HAVE)

An introduction paragraph telling the reader about the recipe

A bullet list of materials

A bullet list of ingredients

A numbered list of instructions

OPTIONAL TOPPINGS (THINGS THAT CAN CHANGE FROM RECIPE TO RECIPE)

The introduction can tell why this recipe is important or interesting

The introduction can tell a story or fun fact

The recipe can tell about one way to make the dish or it can give choices

After the activity

- Use student ideas to make copies of the ‘recipe for a recipe’ and three-hole-punch it, so students can keep it in their journals and refer to it during their writing process in subsequent sessions.
- Use these ideas to generate a graphic organizer. An example has been provided in Appendix L.

Drafting a recipe.

Having taken notes and talked about writing structures as a pre-writing exercise, students should now be ready to draft, revise, edit and publish their own recipes. This activity is designed to kick off this writing process with a drafting lesson.

Teachers may adapt this lesson, and subsequent lessons, to reflect expectations for structure and mechanics that are appropriate for their upper elementary students (i.e., writing a paragraph that begins with an indent, including an introductory sentence, listing supporting details connected by linking words, including a conclusion, and using grade-appropriate spelling understandings).

Learning objectives.

- Students will use their recipe observations to write informative/explanatory texts to examine a topic (sauce), and convey ideas and information clearly.
(CCSS.ELA-LITERACY.W.3.2)
- Students will draft and revise to ensure their recipes are written clearly and descriptively enough, with appropriate event sequencing, such that a reader could recreate the sauce. (CCSS.ELA-LITERACY.W.3.3)
- Students will refer to mentor text recipes as they write their own, and take care to reproduce the typical structure and organization of a recipe as they write.
(CCSS.ELA-LITERACY.W.3.4)

Ingredients

- Photos and videos from the sauce-making session
- Students notes from sauce-making session
- Graphic organizers for each child (Appendix L)

Instructions.

Before the activity:

- Print, or make available digitally, photos and videos from the sauce-making session, to support students' memories of the day.
- Ensure students have a complete set of notes from the previous activity so that they can write their recipes.
- Print graphic organizers for each child.

During the activity

- In the meeting area, introduce the activity:
 - *“Today, we are going to write our own recipes, based on what we’ve observed in the kitchen, and what we’ve learned about good recipe writing from the recipes we’ve used. Today, we’re going to think back to our sauce designing session, and explain to our readers how to make our own special sauce. Remember that you’ll be writing an introduction, listing your materials and ingredients, and then telling the steps.”*
- Note that students will have opportunities to add on to their writing and to edit it for spelling. However, acknowledge that writing goes more smoothly if you don't have to stop and wonder how to spell a certain word. With the group, brainstorm the words you might use as writers for this recipe.

Example

Food words	Flavor words	Cooking words
- Tomatoes	- Sweet	- Bowl
- Olive oil	- Sour	- Spoon
- Honey	- Salty	- Teaspoon
- Sugar	- Bitter	- Measure
- Syrup	- Umami	- Mash
- Vinegar	- Spicy	- Stir
- Lemon juice	- Delicious	- Taste
- Soy sauce	- Yummy	
- Tomato paste		
- Parmesan cheese		
- Fish sauce		
- Bread		

- Tell students that they can begin with the part that feels easiest, whether that means writing the introduction, writing the lists of ingredients/materials, or listing the steps. Then, they can return to other parts of the recipe to finish it up.
- Model the act of drafting a recipe, using your own hypothetical notes to demonstrate/do a think aloud:
 - *“First, I’m going to look at my notes and re-read them. Do they have all the ingredients and steps? I can quickly add on if something is missing.*
 - *Then, I’m going to think about what I did first. I learned during our taste test that my favorite flavor was sour, so I knew that the first thing I was going to do was add vinegar to my tomatoes. I know I had one tomato, and I used 3 teaspoons of vinegar, so I’m going to write that down first in my ingredients.*
 - *What else did I add to my sauce? It looks like I also added 1 teaspoon of olive oil, 1 teaspoon of lemon juice, 1 teaspoon of fish sauce, and 1 pinch of salt. I didn’t want any bitter flavors, so I left those out. Now my ingredients list is done.*

- *Now, what did I use to put all this together? I know I had a bowl for stirring, a spoon for mashing and mixing the tomato with the sauces, and a teaspoon for measuring out the other flavors. So I'll write that down on my materials list.*
 - *Now it's pretty simple to write the instructions, because all I did was add one ingredient at a time, using my materials and my ingredients. For example, 'First, mash the tomato with your spoon' is the first step. 'Next, add three teaspoons of vinegar and stir.' That is my next step, and so on.*
 - *Now, if I didn't have my notes, because I was having so much fun cooking, I could also look at the photos we took, and that might help my memory too.*
 - *After that, I'll have some time to think about my introduction. This is going to be fun. Why do I think my sauce is so special? What are some good uses for my sauce? What are some interesting words I can use to describe it and convince my reader that it's going to be yummy? I'll get to think about that last. Maybe I'll go back and look at the recipes I read to get some good ideas."*
- Students can now go off to draft their recipes.
 - Teachers should set a specific amount of time (i.e. 15-20 min) where students are expected to persevere through writing (which can be difficult for some students, particularly in the beginning as they get started). Note: some students may need multiple sessions to complete a first draft of their work. Students who finish early can be encouraged to add on details.

- Teachers should provide some basic norms for students: i.e., take a break if you need to but ask the teacher first, raise your hands if you run into a problem or question, and do not make noises that will disturb other writers.
- Students with questions can remain with teachers and share them as other students get started.
- As students finish, and/or as the writing period comes to a close, invite 3-4 students to share a key part of their writing by reading it aloud. It may be the title they've given to their sauce, the way they've described the steps, etc.

After the activity:

- Notice whether students need additional writing periods or not to write a complete draft of their recipes. These drafts do not need to have perfect spelling or syntax yet; they simply need to contain all the students' ideas and necessary steps related to the recipe.
- At the same time, analyze students' initial writing to determine what they will need to learn in future lessons. Are they all misspelling "tomato"? Do they forget to capitalize their names or the first letters in a sentence? Consider these for teaching points later on.

Revising recipes for clarity.

Having drafted their recipes, students should now be ready to revise their recipes.

Revising can be a subjective process: only the writer can determine whether a piece feels “done,” though he or she should incorporate feedback from others throughout the process.

This activity is designed to facilitate this process by asking students to first self-assess their writing, then asking peers to assess their writing, using a checklist. The revising assessment here is qualitative: it asks the reader to note areas of growth, without assigning a score.

This revising activity focuses on clarity as the goal of the first round of revision. However, this is just one of many potential goals the writer may have during the revision stage. For other ideas on creative revision techniques that push writers to do additional research (many of which I have used with my own students, and in my own writing), see below.

I have selected “clarity” here because same-age readers can typically assess another student’s writing in terms of whether or not they understand it and can make sense of it, and because very often, students in this age group will respond more readily to peer feedback than to teacher feedback (Wood, 2007). They may also be prompted, upon looking at each other’s work, to incorporate ideas or skillful techniques they see in each other’s writing, moreso even than when reading the “grown-up” mentor texts they used earlier on.

After students have participated in this revision technique, they can use the same process to engage in, and evaluate, other revision techniques at the teacher’s discretion.

Once students have engaged in self- and peer assessments for a revision technique, teachers have the option to provide their own, more experienced reader’s

perspective on the developing work. Even the strongest writers may benefit from a suggestion or two on ways to grow and a note outlining further ways teachers can support them. Meanwhile, struggling writers may need explicit suggestions, along with one or more in-person conferences with a teacher, to fully grasp the best way to use the given revision technique, and to meet grade-level writing expectations generally. Reviewing each student's developing work at this stage provides a way for teachers to check in with all students, ensuring that no writer "slips through the cracks" before students move on to the next stage of the writing process (editing their work and preparing it for publication). It also provides the teacher with a jumping-off point for one-on-one writing conferences, following this activity or later on in the process.

At the same time, teachers' time is always of the essence. You may prefer to reserve your judgement (and time spent writing individual feedback) for later on in the process, when students' writing is closer to publication. Thus, feel free to let peers' feedback stand in for your own if need be at this stage.

Learning objectives.

- Students will revise their recipes for clarity, using peer conferences and teacher feedback to see where their writing may not be clear. (CCSS.ELA-LITERACY.W.3.2)
- Students will revise to ensure their recipes are written clearly and descriptively enough, with appropriate event sequencing, such that a reader could recreate the sauce. (CCSS.ELA-LITERACY.W.3.3)

- If necessary, students will also conference with adults to receive guidance and support as they determine where their writing may be strengthened, organized and clarified. (CCSS.ELA-LITERACY.W.3.4)

Ingredients.

- Appendix L: Revising checklists (self, peer, teacher)
- Student writing
- Colored pencils for revisions

Before the activity:

- Create partnerships for students so they may conference with a peer about their recipe drafts. Consider the following as you do:
 - For strong writers who are already apt to push themselves: they may benefit from the additional challenge of supporting struggling readers by articulating the steps they have taken as strong writers to improve their work.
 - For students with strong potential who could be pushed to improve their work further: they may benefit from being paired with other strong students so that they can see what they might be capable of producing, and from hearing from these students about ways that they can improve.
 - For students who are struggling to produce a complete draft, or to see where their work has errors or could be improved: they may benefit from being paired together, with a teacher sitting in on their partnerships and

helping to guide the conversation, so they can both hear the same guidance.

During the activity:

- Introduce the activity—assessing your work and thinking about how to make it better—by modeling again with your own hypothetical work. Here’s how a think-aloud might sound:
 - *“Now that I’m done drafting, I’m going to work on revision. ‘Re’ plus ‘vision’ means to look again, which means that during revision, I’m going to look again at my work with fresh eyes, and think about what I can add.*
 - *Today, my goal for revision is going to be clarity. Clarity means making sure that my writing is clear and that it makes sense.*
 - *The first thing I’m going to do is read my work out loud to myself. That way if anything sounds funny to me, I can change it right away.*
 - *To make sure I don’t miss anything, I’m going to use this checklist to remind myself to check certain parts of my writing. On the first part of the checklist, I’m going to notice and make sure that I have all the parts. On the second part of the checklist, I’m going to notice and make sure that everything’s in the right order and that it makes sense.*
 - *If I notice a place where I want to add on, I’m not going to drop everything and re-do it -- I’m going to underline it with my colored pencil, then I’m going to make a plan for what I’ll do to make it better.*

- *When I'm finished, I'm going to take a moment to appreciate my hard work. What did I do well? I'll write this down under 'where I glow.'*
- *Next, I'm going to make a plan: where can I grow? Where do I need to go back and add on? I'm going to make a note of this.*
- *Finally, I'm going to ask myself: do I need help with anything in my plan? For example, do I need to meet with a teacher to understand parts of this checklist, or take a look at some photos to refresh my memory of what happened because I'm missing a piece? I'm going to note that too."*
- Now, the students take their turn, first assessing their own work. Students can take 5-10 minutes to complete this exercise. Then they can come back together for the second round of revising, during which they'll conference with a peer. Explain how students will do so:
- *"Sometimes, when I've been working hard on a piece of writing, it can be hard for me to notice things that are missing and not so clear. So after I take the first look at my writing, I'm going to meet with a fellow writer to get their opinion.*
- *I will provide you with partners, and you will help each other. You'll go through the same checklist, this time for your partner's work, and give them your opinion.*
- *If you see areas that need some revising, you will use a different colored pencil than the one they used to underline them. Don't add anything to your partner's work.*

- *At the end, don't forget to give them a compliment on something--where they 'glow--and some specific advice on how to grow and what to do next. For example, don't just write, 'Add on more'--tell them, 'Step 2 confused me. I think you should look back at your notes and think about what you did here.'"*
- Provide students with a second copy of the checklist. Pair them in partners and prompt them to exchange recipe drafts. Provide 5-10 minutes for students to complete this second half of the exercise
- When students have finished both self-assessing and peer assessing, gather them together in the meeting area to check in. Some questions you could ask:
 - Did you notice any changes you needed to make before you showed your work to someone else?
 - How did it feel to check your work before having anyone else check it?
 - Did your partner give you advice or ideas, or noticing something missing, that you had not thought about before?
 - Were there any areas where both partners felt like they needed help?
- Tell students you will also be filling out an assessment form for their recipes, using the same rubric.
- Provide 5-10 additional minutes for students to add on to their work--ideally, in a different colored pencil to show their changes--based on their self- and peer assessments.
- Ask students to hand in work and assessments.

After the activity:

- Review both students' written work, with revision marks, and the assessments-- both "My writing" and "My peer's writing." Did students complete them thoughtfully, for both themselves and for others? Was the feedback useful? Would some students benefit from meeting 1:1 with teachers about their writing?
- If desired, fill out an assessment form yourself for each student, noting where they glow, can grow, and where you can help and/or plan to conference with students who may require additional guidance. I.e., students who may struggle to meet grade-level expectations, or to challenge themselves to go beyond their demonstrated efforts to meet their individual potential.

Additional experiences to support student revisions.

Below, I provide a menu of ideas for additional experiences that may prompt students, who are now invested in the idea of writing their own pizza recipes, to do additional research to improve their work.

To be clear: it is not my intent to limit students' exposure to these exciting activities to the revision stage. These would be worthwhile activities to use for brainstorming or to build community as well. I include them here because I think it is helpful to engage in these activities after students have a solid base of background knowledge in order to get the most out of these activities, as they will already be invested in using what they learn here to improve their own work.

It is also not my intent to relegate these ideas to the realm of the "optional but unnecessary." I think a deep and meaningful food unit could and should include all of

these activities. It is simply not possible, within the scope of this project, to write about all of the incredible possibilities teachers and students have for exploring the world of food together!

Here are some ideas that would work well for stoking student's enthusiasm for recipe writing:

- 1) *Take a field trip and incorporate your observations about the ways in which people are making this food in "the real world."* For example, visit a food court, pizzeria or the cafeteria to see how people in the community are cooking. Afterwards, students can jot notes in a journal, to incorporate into their writing later: What did we see and learn about pizza? Did they inspire us to try anything new with our own recipes?
- 2) *Go on a "toppings treasure hunt" at your nearest grocery store or farmer's market.* Students have investigated bread and sauce, and potentially cheese, but there's a world of toppings beyond the simple *quattro formaggio* combo. Students can roam the market in groups, with a set budget, searching out toppings that might interest them. Think sweet roasted cauliflower, sour pickled yellow peppers, salty slices of prosciutto from the deli counter, bitter broccoli rabe, or umami black olives. Students can take these ingredients back to the "test kitchen," using kid-safe knives to break them down and sprinkle on top of their bread and cheese. Afterwards, students can jot notes in a journal about what they liked or didn't like, and incorporate these new ingredients into their recipes.

- 3) *Interview an expert.* In some communities, this may mean the local baker or pizza maker; in other communities, this might mean an Italian nonna who knows her way around a traditional red sauce. Search out experts in your area and ask students to brainstorm questions for them, based on the unanswered questions from your investigation. Invite the “expert” to visit the class—either in person, or via Skype—for a “press conference,” in which students politely take turns asking questions. (In our class, we invited a local recipe developer to talk about how she tested her recipes and ingredients—even borrowing a friend’s BBQ to develop recipes for a company that sold outdoor grills.) Students can jot notes and quotations from these experts in their journals, and later, work them into “did you know?” fun facts in their recipe introductions.
- 4) *Visit a museum—virtually if necessary.* Our pizza-loving country has more than one pizza museum, and countless others devoted to food generally. There’s Chicago’s U.S. Pizza Museum (uspizzamuseum.com), Philadelphia’s Pizza Brain exhibit (pizzabrain.org), New York’s Museum of Food and Drink (mofad.org), Washington, D.C.’s Food History Project at the Smithsonian (americanhistory.si.edu/topics/food-history), New Orleans’ Southern Food & Beverage Museum (natfab.org) and the all-online, interactive Food Museum project (foodmuseum.com). Students can browse these resources for ideas; though they may not all be strictly related to the recipes they’re studying, they can lead to new ideas and introduce students to exciting nonfiction resources they may return to for years to come.

- 5) *Incorporate a historical perspective.* Adding a fun fact or two about the history of a dish is an excellent way to strengthen a piece of food writing. I.e. History Channel's *Hungry History* delivers an excellent five-minute overview of the famous flatbread, along with an informative article appropriate for upper elementary school students (see Turim, 2012). Consider showing the video, and providing the article to students, so they can take notes and add interesting facts gleaned from these resources. Encourage them to repeat this process if they write about food in the future, seeking out media (video, photography, museum exhibits, articles and more) that help them tell the "life story" of their dish. Ensure students cite their sources accordingly, to acknowledge hard-working food historians for their original discoveries.
- 6) *Hit the (cook)books.* In your classroom library (or on the Internet), there are countless ideas, photos and tips for inventive flatbread toppings and sauce techniques. Encourage students to spend a day (or several) poring over these recipes in search of inspiration. Teach them how to take notes using their journals or 3x5 cards, citing sources where credit is due, and to incorporate these ideas into their recipes (perhaps testing them first in the kitchen on a given day). Ensure students note these sources of inspiration in their recipes.

Suggested read-aloud: Gai See: What You Can See in Chinatown, by Roseanne Thong (2007).

In this book, readers experience the color and bustle of a market over four seasons, and are introduced to many new Chinese words along the way. The protagonists in this book are Chinese.

This story can help readers to see that there are many types of markets—markets that can be sources of inspiration and education. It can also serve as a mentor text for student writing (narrative or poetry) following a field trip to a local market.

Editing recipes.

When students are finished drafting and adding on to their work, it is time to prepare it for final publication. In this activity, students use a checklist to strengthen their writing.

Compared to revision, editing is less subjective, more straightforward. While drafting involves recording your ideas as best you can without support, and revising involves evaluating your work to decide what “best” looks like for you personally, editing ensures (and publishing requires) that writing be completely error-free, according to the shared conventions of English.

As with the previous activity, there are three versions of this process: a self-assessment checklist, a peer checklist, and a teacher checklist. Teachers can tell students that these additional layers of editing are typical for any publication (where copy moves through layers of senior editors, junior editors and copyeditors), including the mentor organization for the unit, *America’s Test Kitchen*. The purpose is to support writers in producing their very best work.

Students may not realize, until explicitly told, that all the writing they have seen in their classroom has passed through these layers. This is why much of the food writing we see in cookbooks and magazines is of such high quality and clarity compared to the drafting writers may do in the beginning: because these writers have gone through this exact process of improving and iterating with their work.

Learning objectives.

- Students will edit their recipes, using peer conferences and teacher feedback to see where they need to make changes to capitalization, organization, punctuation and spelling (COPS) for clarity. (CCSS.ELA-LITERACY.W.3.2)
- If necessary, students will also conference with adults to receive help with meeting grade-appropriate expectations for writing mechanics. (CCSS.ELA-LITERACY.W.3.4)

Ingredients.

- Student writing
- Revising and/or editing checklists (see Appendix M & N)
- Different colored pencils for self-assessments, peer assessments, and teacher assessments, to assess/show what students can do independently as editors, and what they can do with support

Instructions.

Before the activity:

- Review students' writing to determine which aspects of mechanics the group has mostly internalized and which aspects may need to be introduced or re-taught. I.e., are students mostly capitalizing and using punctuation, but frequently misspelling common words, indicating that explicitly teaching the use of a spelling dictionary or using a word wall should be a focus for an editing lesson? Or do they need an introduction to all of these ideas and explicit teaching on how to successfully edit their work?
- Alternatively, can students be grouped into several categories based on their writing development? I.e., is there a group that needs intensive editing support from teachers, a group that can work independently with peers the checklist, and a group that needs an additional challenge?
- Develop short mini-lessons for the whole group or small groups accordingly, to support students' use of the editing checklist.
- Create partnerships for students to work with the checklist in pairs. Consider pairing perceptive students who are strong self-editors with students who may have trouble perceiving errors in their own work (but may have insights to add to a fresh piece of work from a peer).
- Generate a section of sample text to use (on chart paper or in a SmartBoard document), with several errors mirroring the common errors you see in students' work, as you demonstrate how to use the checklist.

During the activity:

- Show the sample text you've generated, with errors, to the group. Ask the students to help you find each error.
- Now, hand out the checklist. Ask students to check the boxes with you as they relate to the sample text:

- 5 points: I re-read my work using COPS and made changes to help my reader by:
 - Checking C: my capitalization
 - Checking O: for missing or misplaced words
 - Checking P: my punctuation
 - Checking S: my spelling, including using the word wall below, and/or a spelling dictionary when needed
 - My writing is error-free.

- If any step in the checklist was missed (i.e. the sample text is missing a word), simply model how you might address that step.
- Ask students to go off and do the same to their writing: first circling the errors they know (or suspect) are there in their writing, then going to the checklist to make sure they checked for everything. Ask them to give themselves a score at the end. Mention that they will also meet with a peer and have their work checked by a teacher, and will have the chance to compare these scores with their own.
- Provide 5-10 minutes for students to self-assess their writing while you monitor the room.
- If students ask for help, remind them that this is in part a self-assessment of what they can do independently, and where they might need help. Some tips on responding to common questions:
 - If students ask you to confirm their thinking (“Do I need a capital letter here?”), tell them that they will soon be able to check with a peer.

- If students ask you for help with spelling a word, you can guide them to use the word wall on the checklist (if the words are there) or a spelling dictionary (if available). If those tools do not help, you can help the student spell the word, but the goal is to help them find ways to independently check their spelling.
- After students have finished editing, they can meet with a peer and exchange recipes. Peers should use a different colored writing implement to indicate newly spotted errors. If peers attempt to fix the errors rather than circling them for the writer him/herself to fix, gently remind them to use circles. This will help the writer to determine what needs to be changed.
- Note that students will have time the following day to address their errors, after teachers have taken a final look.
- After students have completed these exercises, call them together in the meeting area and/or provide them with an writing exit ticket to determine how things went.

Questions to ask while checking in:

- What was helpful about checking your work yourself first?
- What was helpful about having a peer help you before a teacher helped you?
- What questions do you still have about editing?

After the activity:

- Review students' writing and fill out your own editing checklist for students' work, indicating any remaining errors they may have missed.

- Plan to conference with any students who seemed to struggle with this exercise-- i.e., not seeing a significant number of errors, or filling out self-assessments that do not reflect an accurate assessment of their work.

Writing conferences.

Writing conferences provide a way to support students and clarify any remaining questions they may have about the writing process. They may also raise questions about understandings throughout the unit. While some teachers employ the conference selectively as a tool, placing in triage students with the highest need and students who need less help, some teachers move systematically through their class roster, ensuring that every child has this moment for face time with the teacher before they publish their final work. It is up to you to decide whether you will conference and with whom here.

Typically, students will be asked to work independently while the teacher sits to the side with individual students, conversing quietly. Students may be working here on finishing the revising and/or editing work introduced in the previous activities, or they may move on to writing an “About Me” for the final product.

Learning objectives.

- With guidance and support from adults, students produce writing in which the development and organization are appropriate to task and purpose. (CCSS.ELA-LITERACY.W.3.4)
- With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should

demonstrate command of Language standards 1-3 up to and including grade 3).
(CCSS.ELA-LITERACY.W.3.5)

Ingredients.

- Student writing
- Teacher editing checklist (last page of Appendix N)
- Different colored pencils for self-assessments, peer assessments, and teacher assessments, to assess/show what students can do independently as editors, and what they can do with support

Instructions.

Before the activity:

- Review students' writing to determine which students need additional teacher support—either to challenge themselves or to meet grade-level expectations. (Other students may also benefit from a check-in about their relative strengths and areas for growth too!)
- Complete the editing checklist so that you can use it to guide your conversation.
- Gather the other revising and editing checklists for the work so that you can refer to these during your conversation.

During the activity:

- While other students are engaged in revising or editing work, find a quiet place to meet with each student individually.

- Tell the student that your goal is to help them strengthen their writing. Let them speak first, talking to you about what they've done thus far to do so--on their own and with the help of a peer. Ask them if they have any ideas or goals about where they might go next.
- Give the student the option of reading his/her own work aloud once, or having you read it aloud. (Reading aloud can help you both to locate errors in the text that may be harder to see.)
- Adding on to their ideas, share your own perspectives on where they “glow” and can “grow.”
- Invite the student to set a goal and then to make a plan with you, based on the above. In the plan (which can be verbal, or written on the form or a Post-It note), detail what the student will do and how the student needs or wants you to help.
- Send the student off to work for 10-15 minutes independently, then check in. How is he/she integrating the ideas you shared? Does he/she have any remaining questions?
- Find a way to compliment the student to conclude the interaction—for effort, for being open to improving his/her work, and/or for the positive changes made.

After the activity:

- Notice what the student was able to do with this support.
- Note steps for further growth if the student was unable to meet all expectations or goals with these supports.

Prepare to publish.

In this activity, teachers and students will prepare to create and showcase the recipes created within the class community. After this activity, I have included a list of the many ways the students can share their recipes and other writing from the unit. The first three involve using technology, a new focus for upper elementary schoolers within the Common Core; the others do not require special equipment.

Learning objectives.

- With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (CCSS.ELA-LITERACY.W.3.5)
- *For students using technology to publish:* With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others. (CCSS.ELA-LITERACY.W.3.6)

Instructions.**Before the activity**

- Confirm that all students are ready to publish. (Students can also publish in waves as they finish.)

During the activity

- Ask students to write a “clean” copy of their work, with all revisions and edits made.

- Ask students to type this “clean” copy of their work (or type it for them in settings where keyboarding has not been taught, making sure to show them a finished copy for their approval afterwards).
- Compile the materials.
- If sharing digitally, ensure each student has a set of instructions for logging in and viewing the work. If sharing in analog fashion, make enough copies for each student to take one home.
- Consider hosting a “preview party” of the finished work for the classroom community before it is revealed to families.

After the activity

- Prepare to invite families to a final celebration sharing the work. This may or may not include cooking the recipes students have developed!

Ideas for sharing students’ final work.

As you decide how students’ work will be shared, consider what you know now about their strengths. What will allow the greatest number of your students to shine? Recipes are one way they will show their learning from this unit, but there may be other methods of communication that showcase the talents of students for whom literacy is a struggle. Consider the framework of Universal Design (Center for Applied Special Technology [CAST], 2011), as well as the theory of multiple intelligences (Gardner, 1993), in your planning; both suggest that providing multiple means of expression will

allow the greatest number of students to be successful in your setting.

Below are some options that provide many ways for students to contribute.

- 1) *Create a blog.* When I tested this curriculum, I created a classroom blog using Tumblr, which offers the ability to create a password-protected URL to keep student identities and images safe. Because my students were not yet familiar with keyboarding, I typed their recipes, as well as other “posts” about the unit using observations from their journals and photos taken during our investigations. I then generated Word document drafts for them to review before hitting “publish.” The blog was shown at our publishing party using a set of classroom iPads. The students helped their parents to navigate through the site, pointing out highlights. For older students, they may be encouraged to type, edit and publish their own posts. Editing and adding photos can also be done by students as time and technology allows. They can also add their bios to an About section on the site. Providing time for viewing “mentor” blogs (*101 Cookbooks*, *Smitten Kitchen* and *Sweet Potato Soul* are options I enjoy as an adult reader) can give students ideas for design, layout, length and tone.
- 2) *Create a video series.* Students can be filmed making their own recipes. This could be included on a classroom blog, or it could be the end product in and of itself. *How2Heroes* (for which I myself have filmed cooking videos) is a great online resource for short (3-6min) examples of cooking videos that feature home cooks and chefs from a variety of backgrounds.
- 3) *Host a fundraiser.* Here, children plan to prepare their food and recipes for sale to

benefit a local organization. Students studying food in this way may connect their work to issues of childhood hunger and poverty, to environmental sustainability, or to immigrant protections. Additional literacy-linked projects might include reading about local nonprofits in order to choose an organization to receive funds, creating an e-mail campaign to invite friends and family to the fundraiser, and creating materials that explain why a particular organization has been chosen as the recipient for funds raised.

- 4) *Create a cookbook.* Before there were food blogs, of course, there were cookbooks. This analog option may be easier for some groups to create together than a blog or event. The class may work together to create an introduction and a conclusion for the work. They may add sidebars or fun facts throughout, and add their bios to an About section in the back. Again, providing time for viewing diverse mentor texts (such as the cookbooks mentioned in the bibliography) can give students ideas for design, layout, length and tone.
- 5) *Create a magazine.* A similar idea, but with interviews and features alongside recipes. A good option if your class has the opportunity to publish multiple pieces, to interview experts, or to visit restaurants and write “reviews.” *Bon Appetit* (for grownups) and *Chop Chop* (for children) can serve as mentor texts here, as can other general-interest magazines with food features (recommended to provide more cultural diversity).

Suggested read-aloud: *How to Make an Apple Pie and See the World*, by
Marjorie Priceman (1994)

This author seems to be inspired by Carl Sagan’s quip that “If you wish to make an apple pie from scratch, you must first invent the universe.” Told in the second person (“you”), this book follows characters who travel to the source of each ingredient in pie. The protagonist in this book, who stands in for the reader, is White.

These stories help readers to see that a lot goes into a recipe! In addition to all the hard work that happens in the kitchen, the foods they enjoy daily also involve complex networks of agriculture and transportation. Reading this aloud at the end of this unit can help students to make connections between their own hard work in the kitchen, and the hard work of other cooks and farmers around the world. (See also: a companion volume about traveling through the USA.)

An expanded menu of options: adding other dishes to serve and explore.

The above list concerns options for students to share their learning; this concerns expanded options for students to share food with each other and their families, before and during the final celebration. Consider enriching your unit of study with the following additional mini-investigations (whether or not you turn them into written recipes).

- Add making ricotta for pizzas to your list of cooking activities: a simple and fascinating process requiring only a few ingredients, it can help students to see the relationship between milk and cheese.
- Include a session in which students learn basic knife skills as they break down vegetables for topping, i.e. mushrooms, peppers, and onions, to be added to the

pizza potluck spread. This could also be paired with a field trip to shop for these fresh ingredients.

- Add side dishes such as a side salad, so that students can compare the taste of raw vegetables versus the same vegetables cooked on a pizza, i.e. red peppers or kale. Students can easily make dressings in groups by shaking them together in glass jars.
- Add a simple dessert (which some students may be clamoring for at this point), such as a chocolate chip cookie or brownie recipe.
- Encourage students to choose additional recipes to investigate and make for their party. (I.e., our group wanted to go further with the idea of dough and sauce, experimenting with handmade pasta and meatballs to go along with their customized sauces, which they served at their party. (See “Books to Support This Unit” for cookbooks that feature well-written, child-friendly recipes.)

Creating an “About Me” section.

In this activity, students will write a brief paragraph about themselves as food lovers and cooks to add to their published recipe collection. The end product should give some sense of their growth throughout the unit, and can be used as a full or partial summative assessment (that is, an end-of-unit assessment providing evidence of student growth and learning).

Learning objectives.

- Write informative/explanatory texts to examine a topic and convey ideas and information clearly about oneself as a writer. (CCSS.ELA-LITERACY.W.3.2)
- With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (CCSS.ELA-LITERACY.W.3.5)

Ingredients.

- Student journals (for drafting About Me)

Instructions.

Before the activity:

- Encourage students to explore the library and to read several author bios for cookbooks and other books to get a sense of their structure.
- You may wish to note some of their observations or use them to create a graphic organizer, in the same way that students did for their recipes. (That said, many students in the upper grades will have written an “About Me” for many previous projects by this point, so this level of support may not be necessary.)

During the activity:

- If desired, generate sentence starters for students that will help them write a food-focused bio, placing them in the room where students can see them. I.e.:
 - My favorite food is...
 - My favorite part of learning to cook is ...

- I think cooking helped me grow as a
writer/scientist/mathematician/historian because ...
- The next thing I want to try cooking is ...
- Provide time for students to generate a first draft of their About Me. Some may wish to brainstorm by talking about their ideas with you, or a peer.
- Ask students to share their About Me with a peer. Invite peers to ask questions or provide suggestions for strengthening and improving the work. (You may wish to use the revision checklist again.)
- Ask students to self-edit their work, then edit it with a peer. (You may wish to use the editing checklist again.)
- Ask students to hand in their About Me for final editing from a teacher.
- Ask students to write a “clean” copy of their final About Me for publication.

After the activity:

- Add student bios to the published work.

Planning the publishing party potluck.

In this activity, students will think about the logistics of hosting a publishing party, which may include revealing their recipes *and* cooking them for families. In the description for this activity, I give multiple interdisciplinary options that allow students to solve real-life problems using their learnings in literacy, math, social studies and science. Feel free to try all of them, or select 1 or 2 that feel most meaningful to you and your group.

Learning objectives.

- Students will engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners... building on others' ideas and expressing their own clearly. (CCSS.ELA-LITERACY.SL.3.1)
- Students will explore and solve problems generated from school, home, and community situations, using concrete objects or manipulative materials when possible. (NY Science Standard M3.1)

Ingredients.

- Paper (posters or 8 x 11”) for recording student ideas
- Additional graphic organizers or recording sheets as necessary

Instructions.

Before the activity:

- Consider the following possibilities for your group as you engage them in planning the final potluck and publishing party.

Connecting the work of the unit to social studies. Party planning is, essentially, about understanding how to make all members of a diverse audience comfortable. Students can ask themselves (and their families): what traditions do we always feature at our own parties at home? What additional foods, besides the recipes we plan to serve, are expected at every gathering? What meaningful music makes us feel most comfortable or celebratory? What manners and norms do we observe when we attend

parties? What similarities and differences do we observe among members of our classroom community? How can we create compromises that make everyone feel welcome? How can inviting our family members to contribute meals or materials help to bring about this sense of “everyone is welcome”?

- Connecting the work of the unit to *literacy*. Frequently, party planning means that signage and party invitations need to be created. What do writers typically think about when creating these materials? What does the audience need to know?
- *Connecting the work of the unit to math*. Party-planning aligns closely with upper-elementary math concepts relating to money and multiplication. I.e.
 - It involves adding 3-digit numbers, including numbers with decimals, when purchasing necessities such as plates, napkins, forks, beverages and cups.
 - It involves proportional reasoning: i.e., determining how many guests will attend, how many guests each student wishes to serve with one pizza (i.e. each pizza may be cut into 4 slices or 12 “sample” bites), how many slices each guest should expect to eat (i.e., 1 slice from 4 potential pizzas? 1 small sample bite from each student?) and whether this may require students to double or triple their recipes to serve all guests.

- *Connecting the work of the unit to applied science.* Students can ponder the best way to keep all foods at food-safe temperatures for the event, and how to anticipate and answer “how” and “why” questions related to the science in their recipes from friends and family members. They can share (and/or revise) the posters they’ve made throughout the unit to help support these conversations.
- After considering the above options, decide which aspects of party planning will fall to adults, and which might be meaningful for students to investigate.
- Consider allowing students join “committees” that deal with one specific area from the list above.
- Determine a timeline and budget for this work so that students know their parameters from the outset. Other boundaries may also be necessary (i.e., if students are choosing the music, you may require that it be wordless, so that no explicit lyrics make a surprise appearance while parents are enjoying themselves).

During the activity:

- Pose questions to students as you would pose them to yourself, either in discussion or via a written assignment. I.e.: How many cups, plates and boxes of silverware do we need? How much do they cost? How can we find out? Do we have enough money?
- In groups, ask students to make a plan and share this plan with you.
- Advise as necessary, but allow students to carry as much of the work as possible (even if it means buying party supplies that you consider silly).

After the activity:

- Carry out the plans as best you can based on student input. Cue up the music, guide them through the placement of decorations and the creation of invitations, and get ready to cook!

Cooking for a crowd.

In this activity, students will prepare to make their pizzas from start to finish for a crowd. Each one will use the same flatbread recipe, and top it with their own individual sauce (and, optionally, other toppings). For the first part of this activity, they may work in groups to expand the shared flatbread recipe so that it feeds the invited guests. (I.e., they may triple it so that each student makes 3 pizzas, generating enough for 18 guests to eat $\frac{1}{6}$ th of a pizza.) For the second part of this activity, they will work to expand their individual sauce recipes accordingly (I.e., tripling those as well.) This underscores the theme of “similarities and differences” within the unit.

Note: This activity is recommended only if students are ready to work with proportional reasoning involving multiplication and fractions. It is designed to help them meaningfully *apply*, not necessarily to learn, the underpinning conceptual understandings in math.

Learning objectives.

- Working together, students will determine how to multiply the basic yeasted flatbread recipe to serve all guests. They will use these measurements to make

their recipes for a larger group. (CCSS.MATH.CONTENT.3.OA.A.3;
CCSS.ELA-LITERACY.SL.3.1)

- Working individually, students will determine how much sauce they will need for multiple pizzas. They will use these measurements to make their recipes for a larger group. (CCSS.MATH.CONTENT.3.OA.A.3)
- In some cases, students will use proportional reasoning and equivalent fractions to add or multiply amounts represented by fractions (i.e. $\frac{1}{4}$ teaspoon), arriving at the correct measurements for their recipes (i.e., $\frac{1}{4}$ teaspoon \times 4 = $\frac{1}{2}$ + $\frac{1}{2}$ = 1 full teaspoon) (CCSS.MATH.CONTENT.3.NF.A.3.B)
- Students will cook their recipes in order to check their work.

Ingredients.

- Appendix E (bread recipes)
- Appendix O: Cooking for a crowd: recipe adjustment organizer
- Students' published recipes

Instructions.

- Before the activity:
- Determine how many guests will come to the party, and how many pizza slices each should expect to eat.
- Determine how many pizzas each student should make.
- Create groupings so that students can support each other in the first part of this investigation.

During the activity:

- Using the recipe adjustment organizer (Appendix N), talk students through the idea of multiplying each ingredient by the same factor in order to arrive at an expanded recipe. Use the example on the organizer (in which a recipe for 1 is doubled) as a model.
- Using the bread recipe (Appendix E), ask students to double, triple or otherwise multiply the ingredients to arrive at a larger amount of flatbread.
- Ask students to come together and share their findings. Check their thinking.
- Send students off with their own individual recipes to do the same work with their own sauce recipes, multiplying them by the same factor as the flatbread recipe. (Point out to students: You don't want to double the pizza recipes and triple the sauce, or you'll end up with too much sauce!)
- Ask students to share their recipes and thinking with a partner to check their work. Provide time for students to incorporate feedback.
- Engage students in creating a final grocery shopping list. Some sample math questions this discussion could generate:
 - If we used 1 cup of flour for every 8 students the first time around, creating 8 pizzas, how many cups of flour will we need if we're now feeding 24 guests and we want each guest to have their own small pizza?
 - If each student received 1 peeled tomato as the base for their sauce the first time around, creating enough sauce for 1 pizza, how many tomatoes do we need to buy

for the class if we are each making 3 pizzas and there are 12 students in the group?

After the activity:

- Double-check students' calculations.
- Head to the store to buy the ingredients. Next, students will cook them!

The heat is on! Cooking for the potluck.

Students can work in shifts or centers to create both the dough and the sauce for their pizzas. Students can make the sauce while the flatbread is rising, or on the next day, while the flatbread rises overnight in the refrigerator. Pizzas can be baked fully and then frozen and reheated if necessary, so that this work does not all have to take place the day of the party.

Learning objectives.

- Students will check their mathematical reasoning by cooking their pizzas.
- Students will work collaboratively to create shared flatbread for pizzas.
- Students will work individually to create their sauce recipes.

Ingredients.

- Consult bread recipes (Appendix E) and “Tomato Sauce Two Ways” (Appendix K) as well as student recipes, to determine materials and ingredients for the party.

- Student worksheets with adjusted recipes
- Optional: consider placing recipes inside plastic sleeves & taping to the walls, so students do not get them wet or dirty while cooking

Instructions.

Before the activity:

- Create stations for students to make flatbread in groups of 4. (You may wish to cover surfaces with newspaper or plastic tablecloths to make cleanup easier.)
Place all ingredients in their original containers so students can measure them.
- Create other stations for students to make sauce individually (i.e. grouping 4 students around 1 set of common ingredients).
- Place recipes and students' worksheets in a safe place (inside plastic sleeves or on the walls).
- Prompt students to determine group roles for flatbread as needed. (I.e., a recipe reader, an ingredient tracker, an ingredient measurer, and a stirrer.)

During the activity:

- Supervise students as they move through the steps of making the flatbread recipe first, but try to allow students to work as independently as possible.
- Cover dough when it is finished to allow it to rise. If students are making sauce and baking pizza on the same day, leave it at room temperature to allow for faster rising. If students will be making sauce on a different day, place the dough in bowls (with plenty of room to rise), cover the bowls with plastic wrap, then place

inside the refrigerator. (Dough can also be wrapped in plastic and frozen for up to 1 week. Defrost by placing inside the refrigerator 24-48hrs before baking.)

- Take a short movement break before moving into the sauce, so students can focus on their individual recipes.
- Move into making sauce. Help students remember that they are using the adapted, expanded version of their recipes, so will need to keep proper proportions in mind in order to ensure the sauce tastes the way they intended it to in the recipe.
- Once students are finished making sauce and dough has risen, students can roll out the dough, spread the sauce on top, and bake it according to the directions on the recipe.

After the activity:

- Pizza can be set aside under tinfoil for up to 1 day and reheated for the party, or it can be wrapped in foil and frozen for up to 1 week. (Reheat pizzas on a baking sheet greased lightly with cooking oil.)

Final publishing party & potluck.

Students now get to celebrate with food and recipe reading! This experience will vary from setting to setting, but should include the opportunity for students to share their food and writing. Consider these factors when hosting the final event:

- *Adult availability:* For such a family-focused unit, it may be appropriate to host an event at a time when the maximum number of adults can attend and share in a savory meal with students. (Early mornings before work are popular for

publishing parties, but consider also the relative appeal of pizza at 8:30am.) If the event must be held at a less advantageous time of day, when parents are working, take care to invite additional adults from children’s families or from the building, so that each child has a caring adult audience member ready to engage with them about their work.

- *Sharing norms:* Consider asking students to kick off the event by presenting their norms for trying new foods in the classroom, and remembering not to “yuck our yum.” (Grown-ups, too, can benefit from receiving guidance on trying foods outside their comfort zones, and remembering to say encouraging, polite things about a child’s attempts to learn a new skill.)

Presenting the work: If it is online, consider using handheld iPads, if available, to show the work. If it is offline, ensure that there is at least one copy per student.

- *Creating an atmosphere:* Don’t forget the cups, plates, silverware, music and decorations! This is, after all, a party. Good luck and *bon appetit!*

Investigation Extensions

The fun doesn’t have to stop here! Below are some ideas for extending your initial work with recipes into year-round units of study.

Social Studies

Connecting present to past. This food-focused unit can lead into historical units in which students investigate the differences between foods and tools used during different time periods and those used today. Beginning with themselves before moving into the study of historical peoples (such as Native Americans or African-Americans

during the era of slavery) can encourage students to see all people as worthy of study as subjects, rather than as Othered objects. *The Cod's Tale* (and/or) *The Story of Salt*, both by Mark Kurlansky, can serve as helpful lookbooks and resources here (and some sections are suitable for engaging read-alouds.)

Social Studies

Connecting local to global. For students studying other cultures around the world, they can begin to identify similarities and differences between the foods eaten by children in the classroom and the foods eaten in other places, and investigate the role that climate and geography plays in shaping the food culture of a specific place. *What the World Eats*, by Faith D'Aluisio and Peter Menzel, can serve as an excellent lookbook resource here, along with *Let's Eat! What Children Eat Around the World*, by Beatrice Hollyer.

For recipes, *The Kids' Multicultural Cookbook*, by Deanna F. Cook, is a well-researched resource with recipes appropriate for classroom budgets and timeframes. Cook traveled the world to gather the anecdotes and recipes used in this globe-trotting cookbook for upper elementary school kids, in which children of many skin tones, economic backgrounds and cultural backgrounds are represented in both photos and illustrations. Though not exhaustive or precisely reflective of the primary cultural minorities in America (there is no section on South Korea, for example), it provides a well-researched and caring cross-section of the foodways to be found outside of the U.S.A.

Science

Connecting the life cycle to the food system. For students studying the life cycle of plants or animals, teachers may connect their cooking experiences to the process of gardening or visiting a farm, and tracing the journey of a particular food item from its origin to the school cafeteria. *How to Make a Cherry Pie and See the U.S.A.* (and/or) *How to Make an Apple Pie and See the World* can both serve as helpful mentor texts here.

Science

Using design thinking. In design thinking, which integrates many different disciplines, people work together in teams to

1. define a problem
2. create and consider many options
3. narrow down their choices
4. compare results and make a decision

Using this framework, students can identify a food-related problem in their communities, ranging from too much food waste in the cafeteria to a dearth of culturally diverse foods in the lunchroom. They can then work with teachers to investigate and solve the problem to the best of their ability.

Students engaging in social justice work can also use this framework to plan a fundraiser, to volunteer in food-based organizations, or to become involved in investigating deeper issues of food insecurity or food sovereignty in their area.

Literacy

Nonfiction writing (multiple text structure study). For students embarking on a nonfiction reading and writing curriculum, continue exploring the many research

methods and text structures involved in food-focused communication. I.e. reading recipes and informational texts on food as mentor texts, note-taking during experiences inside and outside the classroom, conducting interviews, and engaging in hands-on tests of ideas found in texts.

Text structures related to food writing include but are not limited to recipe writing (how-to texts) and other “service journalism” (i.e. a list of best places to purchase food or supplies), personal narratives (i.e. “My favorite food memory”), expository articles on a topic (including the history of a dish, or the science behind it), persuasive writing (“Why food X is better for the environment than food Y”), Q&A interviews, and nonfiction profiles of real people. *Chop Chop*, a cooking magazine designed for children, may be a useful authentic mentor text here.

Nonfiction writing: critical literacy. Students can conduct a survey of the food & gardening resources in their local libraries. They can begin to question what educators and food experts are now questioning: why aren’t more children of color represented in books about cooking and gardening, and in children’s books in general? Why aren’t more writers of color represented on the grown-up bookshelves in the cooking section? What can we do to add our own voices to this collection by writing our own cookbooks, blogs and newspaper articles about the foods and restaurants we like best, and the people behind them?

Math

Using mathematical tools in real world contexts. The concepts explored in this unit dovetail with many key mathematical concepts and models, including measurement and fractions, time, temperature, ratios, price, and graphing. This makes them ideal for

the explorations of 3-digit addition and subtraction, fractions, decimals, multiplication and division commonly taught in grades 3-5. Use the ideas from this curriculum to inspire your class to actually bake those brownies they're using to investigate fractions, actually create the gardens they're studying with arrays, and actually shop for the big dinners they're planning with and for their families through investigations of price and percentages.

Ways to Use This Curriculum

As mentioned previously, this curriculum is appropriate for use in a variety of formats, for children aged 8-10. These may include:

- a multi-week unit of study inside the classroom, particularly as a way to kick off a school year and get to know one's students
- a stand-alone after-school class that meets weekly, as mine did
- a youth program hosted within a community center, culinary school, camp, garden, or farm
- a private home setting.

Below are my brief notes on implementing a cooking curriculum in each of these settings, with some suggested additional resources for each.

Inside the Classroom

Using this curriculum with children in an elementary school setting provides classroom teachers with many opportunities. As mentioned in the "Rationale," it provides an opportunity for teachers to provide children and families with food-related information and skills that can help to mitigate many negative outcomes (physical and academic)

caused by poor nutrition. It provides an opportunity to engage children aged 8-10 in a range of tasks that are developmentally appropriate, from working in groups on “real world” tasks to engaging with abstract academic concepts in a way that is concrete and hands-on. It provides a way to bring students’ identities into the classroom via their foods and their families. Finally, it provides a way for students, through the creation of their own recipes and narratives, to add to the existing literature for children on food in ways that fights bias, and brings complexity and nuance to the “unbearably White” world of healthy eating.

However, as classroom teachers in the age of the Common Core State Standards well know, there are issues related to accountability that create obstacles for teachers where they do not exist in other settings. Teachers must be able to prove to administrators and parents that the activities they are choosing for their classrooms are well-aligned with larger school and community priorities for student learning. Thus, I have made every attempt to provide educators with a range of activity choices, so that they can select the ones that best fit their settings, and with the relevant educational standards, so that they can select the justifications for said activities that are most likely to help them gain traction and support in their settings.

Additionally, every school setting differs in terms of the logistics for cooking. Some schools have purpose-built kitchen classrooms funded by parents or nonprofits (these are few and far between); some have transformed science laboratories into kitchen classrooms; some have small kitchens located in the building for teacher and family use; many others may have a running sink or an electrical outlet, but very few other resources. Thus, I have also made every attempt to provide educators with logistical advice on

setting up a kitchen classroom with whatever is available, and to make sure this ad hoc space facilitates learning in safe and meaningful ways. As with our students, I have learned that it is important not to come to our schools and classroom spaces with a deficit mentality, seeing only what isn't there, but to look for opportunities and strengths wherever we can.

Professional development programs that help teachers to set up these kitchen classrooms remain rare, but they do exist. The Edible Schoolyard, with locations in New York City and San Francisco, has been invaluable to me as a NYC-based educator: their frequent and affordable events provide teachers with in-person guidance, hands-on experiences with the types of learning tasks teachers can try in their classrooms, and lists of materials and norms. (Many of the latter have made their way, with permission, into this curriculum.)

For teachers living outside these metro areas, it is possible that local farms, botanical gardens or recreational cooking schools can provide additional logistical support. Shelburne Farms in Vermont in particular is an excellent resource for locating farm-based education programs, as is the Farm-Based Education Network, founded by Shelburne Farms.

In the absence of these resources, teachers may still gain access to cooking tips and expertise by delving into the world of children's cookbooks (see "Finding Resources" and "Books to Support This Unit"), by watching YouTube videos for any recipes they're considering for the classroom, and by asking parents to share their own expertise with recipes they make at home. It truly takes a village—but educators already know this.

In After-School Programs

Because many after-school programs take place inside the school setting, many of the academic and logistical constraints still apply. However, there are some opportunities, and some obstacles, unique to this setting, which I will briefly summarize here—especially since this was the setting in which my curriculum was tested. (For a more detailed description of my own experience, see “Findings.”)

The primary opportunity for educators working in afterschool settings, in addition to the opportunities to support students listed above, is the opportunity to innovate. After-school programs may align with school priorities but are not typically required to navigate by the lights of the Common Core standards, so there is more room to try new things—and to make mistakes. If the school is considering taking on a new food-focused curriculum, the after-school setting is an excellent place to create a pilot program first before introducing it in classrooms.

There is also the opportunity to experiment with mixed-age groups, in ways that are difficult to facilitate during the busy school day, when students are more often grouped with same-age peers. As noted in the Rationale, educational researchers and theorists such as Vygotsky (1978). and Rogoff (2003) have posited that children benefit in unique ways from learning in mixed-age groups, where older children have the opportunity to lead and younger children have the opportunity to observe and learn from more experienced children. This dynamic can provide children with the opportunity to show different strengths, and to benefit from the strengths of different children, than they might during the school day. It goes without saying that fostering relationships between

children beyond the ones they enjoy in their same-age classrooms can only be of benefit in building a stronger and more cohesive overall school community.

The primary obstacle in after-school programs—which, I have found, is also an opportunity—is the socioemotional climate of the after-school environment. For some children, this is their best time of day (like adults, children are not all morning people), but for many others, they arrive in the after-school setting feeling tired, their attention spans nearly spent, and sometimes additionally browbeaten by the social dynamics of the day. Students in after-school can come in with a variety of stories from the school day: of being bullied at recess, of not understanding their lessons, of feeling afraid or ashamed in their classrooms. They may also come into the after-school class with favorite peers who provide them with comfort, or with the very same aggressors they encountered at recess; very frequently, they are also grouped with children that are not previously known to them, and this may be anxiety-inducing as well. As a result, after-school instructors may find that students' more pressing socioemotional concerns will interrupt their carefully-planned lessons—that is, if they do not also plan for these issues to arise, and plan for humane ways to address them.

It is for this reason that I have included so many community-building activities, inspired by the Responsive Classroom philosophy, so that students can begin the session with a feeling of connectedness and safety among all class members. It may further behoove after-school instructors to build in routines for students—individually, or as a group—that help students to decompress and then re-set for the session. For example, teachers might introduce a routine that asks students to summarize their day in a sentence or a word (with the expectation that teachers will follow up if students share something

concerning). If some individual students appear to have trouble concentrating or keeping their bodies calm in the kitchen, educators may encourage them to stretch, move, draw, or drink some water while waiting for the after-school session to begin. If other students appear to have chronic anxiety issues following a long school day, educators may take some time to talk with them individually, encourage them to keep a journal, or visit a trusted adult, before making their way to the after-school session.

I have also included suggestions for quiet activity books teachers can use to provide children with a low-stress way to separate from the group mid-session, if necessary, while still being contained safely within the classroom in a non-disruptive, non-isolating way.

In Youth Programs

The dynamics of youth programs (i.e. those hosted in community centers, in churches, on farms, and in conjunction with many nonprofits) will mirror the dynamics of the after-school setting in many ways. Because they are not strictly beholden to K-12 education policy, they can innovate; because they are outside of the school day, they will need to plan for ways to intentionally create safety and community for students.

Additionally, there are very special opportunities that come with hosting classes outside of the traditional education system. Because they may take place in settings that are more well-appointed than schools—in a culinary school with all the tools one needs, for example, or on a farm where the ingredients can be picked fresh from the ground—they can provide intense, authentic and memorable experiences for students.

Because the adult staff in these programs often have expertise and skill-sets related to the content area—i.e., horticulturists at the local botanical garden, farmers at the local

orchard—they can answer students’ granular questions easily and confidently. And because these programs are not strictly for children, they can provide an array of innovative and culturally responsive programs—i.e., hosting cooking classes where parents and children learn new recipes together (as seen at the Sylvia Center in New York City, or youth programs in which students “graduate” and become the teachers and mentors for incoming children (as seen at The Food Project in Massachusetts).

However, there are some obstacles I have seen for programs outside the traditional education system that I have attempted to mitigate here. One is the lack of pedagogical training for people running programs outside the school system: they may know a great deal about flowers or food, but they may not have a background in delivering this content to young children, which necessarily involves thinking about developmental appropriateness, proper lesson pacing and structure, scaffolding for students with varying ability. They may struggle with students who have sensory issues or attentional weakness, seeing them as “picky eaters” or troublemakers rather than students who are facing real obstacles to success through no fault of their own. Or they may pitch curriculum too high or too low, causing children to misbehave because they are either bored by content that is not challenging, or befuddled by content to which they are not yet able to connect meaningfully. (See “Examination and critique of existing materials” for the ways in which eager adults can also create “ecophobia” by introducing environmental issues about which they are passionate to students who are too young to comprehend them.) This can create frustration for both educators and learners.

For educators who have not had prior experience with child development in theory, curriculum development in practice, and classroom management, I strongly

recommend reading Chip Wood's *Yardsticks*: this readable resource explains what educators can expect from typically developing children at each each stage, and suggests ways to create curriculum to match their needs.

Increasingly, serving students well also requires cultivating cultural competence in selecting and adapting materials to create an anti-bias, anti-racist learning environment where all students feel equally respected, and enjoy equal access to the content. Without this expertise, programs focused on "helping" communities of color can fall flat, failing to achieve their outcomes, or they can even backfire, as they are dismissed as being tone-deaf to the true needs of the community (Guthman, 2008; Meek & Tarlau, 2015).

For this audience, I have attempted to provide a great deal of supplementary information and guidance, particularly in selecting resources. I also strongly recommend reading Louise Derman-Sparks' *Anti-Bias Curriculum: Tools for Empowering Young Children* (1995), in full, and if possible, Lisa Delpit's *Other People's Children* (2006). The former provides more practical tips, but the latter provides a much deeper and detailed perspective on the ways in which all teachers (but particularly White teachers) should adapt their practices to better understand and serve students of color. (See also: "Modifying the curriculum for different cultural contexts.")

Another obstacle is the lack of long-standing relationships with the children involved. Students may come for a field trip, or for a few sessions, but do not always have the opportunity to create routines and expectations as they might in a traditional setting, and this can also have an impact on how well students learn the content and how well they attend to lessons. Certain organizations are now attempting to change this by creating longer-standing partnerships with schools; i.e. a local farm may partner with a

local school to create a year-long study for students in a particular grade, or encourage visits throughout the grades so that the learning experience with food and farming becomes a school tradition.

However, for programs that do not have the luxury of long-standing relationships, I have attempted to create a curriculum that is modular, so that educators can work together with parents, classroom teachers and other adults who know students well, in order to plan meaningful experiences that match student identities, ages and interests. This, to me, is preferable to having a one-size-fits-all lesson plan for every field trip or workshop that may not accomplish its objectives for all students.

At Home

All of the hallmarks of a high-quality education—a welcoming space in which to learn, a caring adult to supervise, the opportunity to learn in a small group—are available in every well-functioning family home. This is an opportunity we should not waste.

However, teaching small children to cook at home can be challenging, too. The learning space is frequently small. The students do not always attend as respectfully to the teacher as they do at school. They are easily distracted by nearby toys and pets. They may complain about having to do the dishes. These are all real obstacles to success!

One way to mitigate these issues is to introduce the same rigorous level of planning and preparation for the space as teachers do with their spaces at school. The choices teachers make to create successful learning experiences are highly intentional, and they involve real work. I have attempted to provide many tips along these lines on organizing the space, setting up the pacing of a cooking experience, and selecting books that help drive home a particular point (particularly if it's about ethics or manners). This

type of thinking may feel more familiar and enjoyable for adults who already consider themselves highly organized, and less so for those who prefer to think of cooking as a more casual and informal experience. Here, I leave the right balance of preparation and spontaneity up to you—as the opportunity here for an adult cooking at home is also to confer your set of values, your “right” way of doing things.

At the same time, adults trying this at home can take comfort in knowing that cooking with children necessarily involves making some sort of mess. Children are not skilled workers in any discipline; they do not have adult cleanliness standards in mind, nor do they have the same fine motor control with tools that adults do, and this can often result in food on the floor. (It helps to have a dog.) Children also do not have the same cognitive strengths as adults do: they are slower to read and remember the instructions on recipes, their attention spans are shorter, their impulse control is weaker, and their short-term memory (where we hold ideas such as “1 teaspoon of salt, *not* one *tablespoon*”) is not as well-developed. So, mistakes (and salty cookies) will certainly happen. All of this may seem clear and intuitive for adults who consider themselves highly creative and flexible, and less so for those who were trained to “clean as you cook” under threat of punishment, those who expect that every recipe they make should result in a restaurant-quality meal or a picture-perfect dessert for the class party, or who themselves have avoided most cooking until this point due to fear of failure.

One way to mitigate these issues (that is, the necessary chaos of cooking) is to cook through a series of potential recipes yourself, using the tools you plan to give to the children in your care, and testing them to decide if you like them while noticing parts that confuse you. For the recipes you like, think about which steps you might safely delegate

to the children in your care, and which you might decide to do yourself, as well as where you will plan to speed up or slow down the pacing of the activity to match their skills. I.e., perhaps you'll find the right spoon and the salt, but your child will get to drop it in the bowl and stir. Perhaps you'll bake and frost a dozen cupcakes for the class party, then give a "test batch" of three or four to your child to decorate freely. Perhaps you'll pre-boil a bunch of carrots before you give them to your child to "chop" with a butter knife, so that the cubes don't fly off the cutting board.

Again, I leave the right balance of preparation and spontaneity up to you, based on your own observations about the needs of your young sous chefs, as well as your own needs. However, I have also endeavored to include a wide array of resources and child-adapted recipes to help you feel as though you can start right where you are. In particular, I strongly recommend relying on developmentally appropriate cookbook resources that have been tested with children, such as Mollie Katzen's *Pretend Soup*, as well as read-aloud books that will get your children talking about the social aspects of eating, such as *Teddy the Taster* and *Dinner with the Highbrows* (see "Books to support this unit" for other suggestions). This will take out some of the guesswork when trying new recipes with children, and make the process more socially pleasant for all involved.

I also strongly recommend trying a variety of activities—and failing at some of them. As the famed chef and teacher Julia Child wrote in her memoirs (2006): "I don't believe in twisting yourself into knots of excuses and explanations over the food you make. Usually one's cooking is better than one thinks it is. And if the food is truly vile... then the cook must simply grit her teeth and bear it with a smile — and learn from her mistakes" (p. 77).

Modifying This Curriculum for Different Age Levels

This curriculum was designed for students in grades 3-5. The cooking activities assume a certain degree of fine motor and gross motor control not always present in younger children. At the same time, the classroom activities presume that certain concepts and skills are still being acquired, such as an understanding of terms like “sustainability” or “food justice” and their global implications. Thus, to adjust this curriculum “up” or “down” necessarily means adjusting both kitchen and classroom activities in ways that make it feel meaningful, accessible and challenging for all students.

For Younger Children (Grades 3 and Younger)

More adult scaffolding may be necessary for many kitchen activities used with students under 8, but students will still enjoy tasting, touching, smelling, observing and even listening to the different foods enjoyed in the classroom. Doing numerous taste tests, in fact, can have a particularly positive effect on expanding students’ palates at this age (Wilson, 2015). This process is outlined in great detail in the excellent Sapere curriculum used in Scandinavian preschool settings (see Koistinen & Ruhanen, 2009), which foregrounds the importance of hands-on exploration with food-based sensation.

Classroom activities for younger children should not rely heavily on writing or calculations, as they do in the curriculum for 8-10 year olds, but may instead include drawing and talking as methods of expression (see Horn & Giacobbe, 2007). Dramatic play, using kitchen tools and play kitchen time, can also help students consolidate their learning.

Care should also be taken to note that students at this age have less background knowledge about food in general, as well as knowledge about the variability between foods and food preparation techniques between cultures. Thus, teachers should use recipes thoughtfully to provide more open-ended exploration with food, versus relying on teacher-directed and explicit recipes that presume a basic understanding of technique. For example, using *Pretend Soup* (Katzen & Henderson, 1994), a wonderful resource for younger children, students can experiment with a wide variety of food materials as they create “bagel faces” at snack time, using simple tools like spoons to spread and sprinkle ingredients (see p. 22-25).

Read-alouds for this age group, particularly those with repetitive and predictable structures, can also be effective in helping students to notice similarities and differences between cultures.

Food-focused fairy tales such as *The Turnip*, *The Gingerbread Man*, and *The Porridge Pot* appear in many different cultures, and thus may already be familiar to young readers, making it easier for them to access these independently. (See table below for many variations on these titles.)

Recommended texts for younger students

<i>The Turnip</i>	<i>The Gingerbread Man</i>	<i>The Porridge Pot</i>
In this story, members of a community come together to pull a gigantic vegetable out of the ground.	In this story, a cookie comes to life and runs away, while its creators give chase.	In this story, a hungry person or family receives the gift of endless food or water, and misuses it to comic effect.
Variations: <ul style="list-style-type: none"> ● <i>The Turnip</i>, by Jan Brett ● <i>The Enormous</i> 	Variations: <ul style="list-style-type: none"> ● <i>Stop That Pickle!</i> by Peter Armour ● <i>The Runaway Rice</i> 	Variations: <ul style="list-style-type: none"> ● The <i>Strega Nona</i> series, by Tomie

<p><i>Potato</i>, by Aubrey Davis</p> <ul style="list-style-type: none"> ● <i>The Gigantic Sweet Potato</i>, by Dianne De Las Casas ● <i>The Giant Carrot</i>, by Jan Peck ● <i>The Giant Cabbage: An Alaska Folktale</i>, by Cherie Stihler ● <i>The Gigantic Turnip</i>, by Aleksei Tolstoy <p>See also: <i>Keats's Neighborhood</i>, featuring illustrations for an unfinished version of <i>The Turnip</i> by Ezra Jack Keats</p>	<p><i>Cake</i>, by Ying Chang Compestine</p> <ul style="list-style-type: none"> ● <i>The Cajun Cornbread Boy</i>, by Dianne De Las Casas ● <i>Señorita Gordita</i>, by Helen Kettelman ● <i>The Runaway Tortilla</i>, by Eric Kimmel ● <i>The Matzo Ball Boy</i>, by Lisa Shulman ● <i>The Sourdough Man</i>, by Chérie B. Stihler ● <i>The Musubi Man: Hawai'i's Gingerbread Man</i>, by Sandi Takayama 	<p>dePaola</p> <ul style="list-style-type: none"> ● <i>The Sorcerer's Apprentice</i>, by Goethe ● <i>The Magic Porridge Pot</i>, by the Brothers Grimm ● <i>Latkes, Latkes, Good to Eat</i>, by Naomi Howland <p>See also: <i>Cloudy With a Chance of Meatballs</i>, by Jill Barrett</p>
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By presenting many versions of the same story, teachers can provide both “mirrors” and “windows” for children in a community (Bishop, 1990), and underscore the idea that no culture has the market cornered on the “only” way to cook, eat, or tell a story. (Because White protagonists and European cuisine are still more frequently centered in children’s literature than other types of people and food, it requires deliberate and sustained effort to drive this point home.) For teachers of upper elementary students, the Common Core Standards may serve as a justification for doing this work in schools, as it connects to a new emphasis in the Common Core for Grade 2 on comparing and contrasting fairy tales from different cultures: “CCSS.ELA-LITERACY.RL.2.2: Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral” (National Governors Association, 2010).

These stories can also inspire children to try writing their own food fairy tales, featuring the vegetables or baked goods they like best, and to try different recipes featuring foods from the stories above.

For Older Children (Grades 5 and up)

Students in this group should be able to engage in all of the activities outlined in this curriculum, and may move more quickly through them than younger children, allowing teachers to build on this foundation in a variety of different directions. (See “Investigation Extensions” for a variety of different ideas.)

Older students may also wish to focus on connections to food-focused careers, more advanced cooking techniques, and more sophisticated problem-solving in their communities via project-based learning units.

For an excellent resource on planning food-focused curriculum for this age group, see *Growing Together* (Gale, 2006), a publication from The Food Project. A short annotated bibliography for older students is also included below for your consideration.

Recommended texts for older students.

- *Zombie Baseball Beatdown*, by Paolo Bacigalupi

The award-winning author manages to combine the politics of factory farming with an engaging plot line about “zombie cows” who go on to infect the main characters’ coach. No small feat! A relatively new title (out in 2014), this may become a cult favorite in later years as our culture’s hunger for politically-relevant food books and zombie fiction only grows (much like the coach’s need for *braiiiiinnns!*).

- *The Cod’s Tale* (and/or) *The Story of Salt*, by Mark Kurlansky

The author of several wildly popular, exhaustively researched and relatively modern histories of various foods, Mark Kurlansky has adapted two of his adult titles (*Salt, Cod*) for younger audiences, to great effect. Both stories drive home the idea that the foods we eat are based on the discoveries of humans all over the world, and by doing so, gently undermine a Euro-centric view of the world that places every victory and discovery in the hands of an English-speaking White person. The Chinese, for example, are credited with discovering natural gas while in search of underground salt reserves in *The Story of Salt*, and the story of Gandhi's Salt March is told in detail. Meanwhile, the Vikings, Basques and Native Americans are depicted battling it out for cod fishing rights in North American waters several centuries before Columbus in *The Cod's Tale*. But it's not all dry (or wet) history: these stories also place the reader in the center of the action by revealing how vital salt still is to our daily functioning, and how imperiled the once-essential codfish is now, during our current era of overfishing.

The books' covers both indicate that they are intended for audiences age 4+, but their text complexity ensures they'll be better used as look books (or longer read-alouds, shared over several days) for kids under 10. Luckily, the books' incredibly detailed and entertaining illustrations, both courtesy of S.D. Schindler, are sure to engage all comers, as well as the many interesting sidebars (complete with historic recipes, a Kurlansky trademark).

- *Dumpling Days*, by Grace Lin

A companion volume to *The Year of the Dog* and *The Year of the Rat*, but works as a stand-alone read. In this volume, Pacy, a Taiwanese-American teen,

visits Taipei for the summer. She struggles to navigate the difficulties of looking like everyone else, but being unable to speak the language. Ultimately, however, she comes to love the food, and to grow closer with her extended Taiwanese family.

- *The Omnivore's Dilemma: Young Readers Edition*, by Michael Pollan

Though this “young readers edition” is still recommended for grades 7 and up, it provides a more visually stimulating version of the author’s seminal work. After laying out the sometimes-uncomfortable paradoxes that omnivores must face when they eat (i.e., the death of animals and the impact of agribusiness), Pollan exhorts readers to “vote with their forks” by suggesting actions they can take to make the world a better place.

- *Chew On This*, by Eric Schlosser and Charles Wilson

Schlosser follows up his groundbreaking work on *Fast Food Nation* with a book that makes the discoveries and themes of that book accessible for younger readers, and includes new information as well. Kids learn about the sad truth about what goes into their beloved chicken nuggets, and become empowered to make more informed choices about their next fast food meal.

Modifying This Curriculum for Different Cultural Contexts

In my Rationale, I detailed two truths that I believe are self-evident with regard to our current situation in America.

This is the first universal truth: all children deserve equal access to the information and skills that relate to eating a minimally-processed diet that is high in fruits and vegetables. This information and these skills, when taught to children and, in the

long-term, practiced by most families, can mitigate or prevent a number of negative outcomes, from decreased health and lifespan to decreased academic performance.

This is the second universal truth: it is incumbent on adults to teach these lessons and prevent these negative outcomes in every setting to which we have access—schools, after-school programs, community programs, and homes—in a developmentally appropriate way that aligns with other important community priorities.

I believe these ideas are relevant to every child in every cultural context. However, because teaching is inherently a political act (see “Rationale”), teaching about food necessarily comes with political and problematic issues related to culture that must be discussed here.

One longstanding critique of the alternative food movement has been its connotations of “unbearable whiteness:” its elision of the fact that not every family has the time or resources to cook in the ways valued by their wealthy and healthy (and often White) peers (Guthman, 2008; Meek & Tarlau, 2015). As mentioned previously, nutrition intervention programs have the potential to be deeply problematic if they lack a sense of cultural competence. I.e., when a “racialized discourse of the ‘peasantry’ as backwards and ignorant’ is operationalized as a public program of intervention, in which upper-[socioeconomic status] White people endeavor to ‘help’ lower-[socioeconomic status] people of color to eat the ‘right’ (White-valued) foods (Guthman, 2008; Meek & Tarlau, 2015).

However, the research to support improved health outcomes through dietary change is strong—and culturally competent programs are gaining popularity and traction. Politically, it behooves educators to tread carefully here, with the full buy-in and

democratic participation of communities served, but not to avoid the path of food-focused education entirely.

Based on my experience and research, I have listed some best practices for adapting this curriculum for use with culturally diverse student populations, in the form of a list of key do's and don'ts.

Anti-Bias Food Education: A List of Dos and Don'ts

Do:

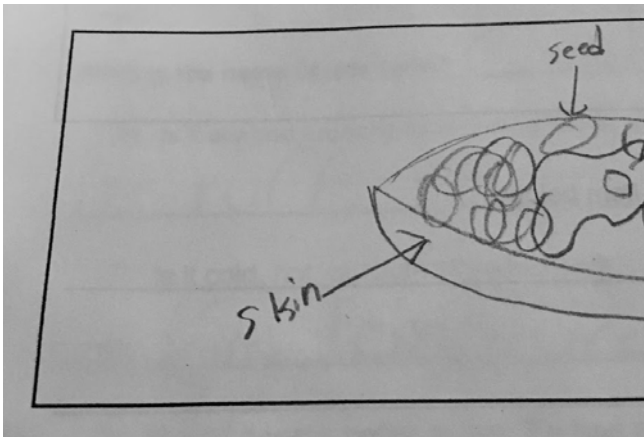
- Prepare to teach in a culturally competent way by engaging in ongoing work with your own relationship to privilege, race and bias
- Read and feature diverse books reflecting the students in the room
- Feature diverse role models reflecting the students in the room
- Encourage students to create their own resources to better reflect the students in the room
- Emphasize “don't yuck my yum” as an important cultural value in diverse classrooms to prevent food shaming
- Encourage students to have choice & voice in recipe selection to ensure they see themselves and the food they value reflected in the recipes
- Be willing to learn new recipes if you come from a cultural background that is different from the cultural background of your students
- Invite family members to share recipes and other resources from their home kitchens
- Invite non-White local “experts” to speak to children about their areas of food expertise

Don't:

- Adopt a deficit mentality with your students *vis a vis* their relationships with or knowledge of food, presuming that their primary obstacle to good nutrition is a lack of access to the information you have (rather than time, skill, and access to culturally appropriate or preferred foods that you may have, particularly if you are a White educator)
- Adopt a dogmatic, binary attitude toward food and nutrition education that presumes to replace students' "wrong" preferred foods and traditions with your culture's preferred "right" foods and traditions
- Read or feature uncritically *only* books with White children cooking, farming or eating culturally White foods
- Feature only White role models when talking about chefs, food writers and other food industry leaders
- Show images of people cooking, or people who are hungry, that reinforce the concept of people of color around the world as primitive, impoverished or unhealthy
- Plan activities with the potential to mirror painful histories of forced labor for communities of color (i.e., ask a group of Black children to provide unpaid labor as cooks or farmers for the benefit of White recipients, as enslaved African people were forced to perform without pay), without first discussing your plans with the students and families involved
- Cook only food you're familiar with if you come from a cultural background that is different from the cultural background of your students

- Offer food, or judge the way students receive food, without considering the textures and techniques that are preferred/not preferred by the ethnic cultures to which your students belong (i.e. raw vegetables and dairy products are not preferred foods for some Asian cultures)
- Offer food without considering the ingredients that are considered sacred or forbidden by the religious cultures to which your students belong (i.e., cows are revered in Hindu culture and cannot be eaten; pork and seafood are considered unclean by certain Jewish sects; hot tea and caffeinated beverages are forbidden for Mormons, etc.).
- Carry out a program of food education that separates children from their cultures and families, rather than inviting families to partner with you to create the program.

Findings



Above: a student's sketch of a pomegranate, inspired by Amelia's Notebook

This curriculum represents a revised version of the curriculum I taught with my students for the first time in an after-school program in New York City this fall. Many of the activities are activities I used (for example, the taste tests and the class blog) to

engage students in their work and later to share it with families. Other activities (like the biography exchange in the beginning to expose students to a diverse array of adult role models, and the “Don’t Yuck My Yum” activity) are activities I realized I needed to include after testing this curriculum.

I have organized my findings into the following categories:

- *Description of setting*
- *Creating a kitchen classroom*
- *Finding resources*
- *Community building activities*
- *Early immersion activities*
- *Initial recipe studies*

Within each section, I have included details about my own experience, as well as reflections from that experiences and subsequent changes I made to this written curriculum, in its current form. After that, I have included some final thoughts on implementing this curriculum.

Description of Setting

I tested an early version of this curriculum in the fall of 2016, in the after-school program of the private school where I had worked the previous year. There, my course was designed to address a lack of food-focused curricula for 3rd-5th grade students at the school. (There was an after-school baking class offered for younger children, but nothing to extend this learning into the upper grades in the after-school program.)

In this setting, technology was a key curricular focus, as was interdisciplinary learning, so the proposed curriculum initially took shape around those community

prerogatives. The class was billed as a “Food Blogging” course—one in which children would learn the inquiry methods and technological skills of real-world food bloggers (i.e. digital photography), while integrating literacy, math, science and social studies along the way. As such, it was not purely about learning to cook, but about examining the world of food through multiple lenses, as food bloggers do.

The school is located in Columbus Circle, steps from Lincoln Center and other cultural institutions in Manhattan; the room where I taught faces Central Park. Nearby, there are many restaurants catering to tourists and locals alike. Daniel Boulud and Tom Colicchio, celebrity chefs, operate several locations nearby. There is also a large Whole Foods a few blocks away. In this setting, it was possible to contemplate a wide range of field trips that would supplement the curriculum we would deliver in the classroom. Though some were curtailed due to our proximity to Trump Tower (there were protests before and after the election of 2016), we were able to make use of the neighborhood as a resource when we traveled to a nearby food court to sample the wares there.

Demographically, the students who attended this school came from high-SES (socioeconomic status) backgrounds, and were culturally diverse. Of my eight students, one identified as Chinese/Taiwanese; one as Dominican; one as Indian; the remaining five identified as White students (or declined to identify their ethnicities). Of the eight students in my mixed-age after-school group, five were third-graders; two were fourth-graders; one was a fifth grader.

I was fortunate to have the help of co-teacher with some culinary experience (a former private chef and caregiver, he worked during the daytime as a kindergarten assistant teacher at the school). This brought our teacher:student ratio to 1:4. This enabled

us to work closely with students on each activity and recipe, and to conduct field trips without additional adult assistance.

Creating a Kitchen Classroom

For the after-school program, I requested the use of a science classroom designed for children in the early grades. My intent was to have a space that was equipped with running water; tables low enough for children to work with food comfortably while standing; and a SmartBoard for classroom activities. I had the benefit of an existing positive working relationship with the science teachers, who used the room during the day, which enabled me to prep comfortably in their room, sometimes for up to 30-60 minutes, before the children arrived to begin their after-school program. Another happy coincidence of the space: it came equipped with an extensive nonfiction library, including many relevant books on food, plants, and the human body, which the children enjoyed perusing spontaneously when given the opportunity.

The kitchen available to me as an after-school instructor was a small kitchen, no bigger than one designed for a small apartment, located off the side of the woodworking shop in the basement. The kitchen came equipped with a stove, a microwave, a sink, and an assortment of kitchen tools that had been acquired by teachers in years past (the school had occupied this building since 1904). The after-school program also provided some staple goods, such as flour and oil, that were shared by different programs (i.e. the baking class for young children). The after school pantry and the kitchen were located on the floor below the science classroom, so I was given the use of a cart to transport ingredients and materials between the two spaces.

These spaces and materials provided the basic foundation for my curriculum to unfold, and the curriculum also took shape around our unique physical opportunities and limitations. For example: because we had a SmartBoard, as well as access to a classroom set of iPads, we were able to compose text and view photos for a classroom blog, which became our final product. Had we lacked these things, our final product may have become the paper-based cookbooks we created in binders. On the other hand, because we lacked space for students to do the dishes following lessons, we decided to pass on the opportunity to close out lessons by asking them to help with this process, though it would have been a good chance to teach into the socioemotional skills—and to relieve ourselves of the responsibility to wash everything ourselves, downstairs, after a session. (A colleague at the Edible Schoolyard once joked that a more accurate description of his job as a kitchen instructor would be “full-time dishwasher, part-time educator.”)

This process of fitting space to curriculum took time and involved a learning curve. Along the way, I was fortunate to have the help and mentoring of more experienced teachers, both within the school and outside, via workshops held at the Edible Schoolyard’s demonstration schools in Brooklyn and Manhattan. I have attempted to pass on as much knowledge as possible in the section entitled “Creating a Kitchen Classroom,” so that other teachers may more quickly move through this learning curve to efficiently set up their space. However, teachers will still have to make their own decisions as to how they will use the space to teach into the skills and values that are appropriate for their settings.

Finding Resources



Observing a children's cooking camp in Manhattan, hosted by Butter Beans Kitchen

In preparation for this curriculum, I read any children's cookbooks I could get my hands on, conducted observations in colleagues' classrooms, visited "real world" cooking and learning environments (i.e. America's Test Kitchen in Brookline, MA) and reviewed my own lesson plans and ideas from years past. What I found—and what I express in "Finding resources"—was a glut of materials featuring Western recipes, traditions and people, and a dearth of materials reflecting diverse role models and the traditions of a diverse audience. I feared creating a curriculum that was only a window, and not a mirror for my students (Bishop, 1990). For more commentary on this process, please see "Critique of existing materials."

I wanted to provide all of my students with a shared foundation of knowledge to start the unit. For our cooking investigations, I selected basic recipes that could be found in many cultures, such as a liquid solution featuring a basic blend of sweet, sour, salty, bitter and umami flavors (in this case, tomato sauce) and a bread (made with either wheat or corn and found around the world).

At the same time, I made the decision early on to provide a great deal of choice and voice in my curriculum after the early immersion stage, so that students could self-select the recipes that most interested them—rather than presenting them with a biased view of the available recipes that elided some students’ backgrounds and identities and not others. (After the test run of this curriculum had concluded, I also added notes about finding diverse role model and recipes, and added community-building activities so that the students themselves could be sources of information for each other.)

The curriculum took its shape from these early decisions about bias and diversity, and then became further solidified around my students’ specific choices. In their case, they were delighted by the creative freedom afforded to them in the tomato sauce activity, which allowed them to design their own sauce based on their unique taste preferences. They also enjoyed the tactile pleasure of working with dough and bread. This seemed to influence their choices, later on, to experiment with handmade pasta (in which they also made dough), meatballs (in which they used many of the same mixing and flavoring skills), and customized sauces for both pasta and meatballs (using the skills they had learned in the sauce activity).

We also had many other experiences outside the kitchen that I hoped would expand students’ horizons and provide them with a shared foundation of food-focused observations—and shared questions. I.e., we spent a day drawing and observing farmer’s market foods in our classroom as a way of practicing observation and sensory language, and we took a field trip to a nearby food court where students photographed a variety of interesting dishes, from Ecuadorian soup dumplings to eye-catching Italian fruit tarts. I was eager to see whether these influences—which invited them to explore the healthier

side of the menu in the form of fresh fruits and vegetables, as well as the wide diversity of recipes available outside of their cookbooks, respectively—would have an effect. They did indeed generate many questions and lots of enthusiasm for these experiences. But when it came time to select the recipes they wanted to explore in the kitchen, it seemed that the early cooking activities with sauce and bread had the strongest impact on students' interests; they wanted to go further with the foods they had already tried to cook, not the foods they had only seen or bought.

The children were also driven, it seemed, by an enduring love for dessert that could not be denied. While one group of four students worked to prepare the pasta and meatballs for our class publishing party, another chose to focus on a food we had never featured as teachers, but was much discussed anytime students had the opportunity to share about *their* favorite foods: chocolate cake.

Community Building Activities

The after-school setting, in my case, shaped my desire to help students feel connected to each other, and to us, at the end of the school day. (For more commentary on the needs of students in after school, see: “Ways to Use This Curriculum.”) We tested some tools from the Responsive Classroom toolbox, such as the Morning Message (adapted for our afternoon use as described in “Curriculum: Early immersion activities”), which were helpful in communicating with our students and eliciting their ideas.

At the same time, we frequently found that the students in our group were eager to move about, given that it was the end of a long school day of sitting. Often, we decided to sacrifice time for community building activities, or classroom activities, to meet students' needs and requests for free play in the gym or rooftop playground.

After several weeks of balancing “work” and “play” during our 90-minute sessions, which always seemed to fly by, I found myself wishing that my co-teacher and I had planned in advance to use movement activities *during* the classroom sessions. I started keeping a list of activities that would connect to our theme of food, which I hoped to introduce to my colleague later on and to try with students. My goal was to find and adapt activities that would foster connection between students, provide them with an opportunity to move and learn with their bodies, and help them to connect their own identities and ideas to the content, in ways that were more engaging than a typical lecture, mini-lesson or written assessment. This list of activities became the “Community building activities” section.

Early Immersion Activities



Above: students use sticky notes to graph their favorite flavors from our taste test

I have mentioned earlier that our school was surrounded by notable food institutions, and that my students primarily came from affluent backgrounds. However,

students' cooking backgrounds were diverse; some students proudly shared that their family members made the best flan or fried chicken, while others said that their families most often relied on takeout or pre-prepared food for their nightly meals. This array of experiences is reflective of the food landscape in our country at large, in which some families cook and others do not (see "Rationale").

Thus, I created (and later added on to) a list of activities that I hoped would provide an even playing field for all students, whether they had cooking experience at home or not. I also hoped that these early immersion activities would function as pre-assessments for me and my co-teacher, giving us an indication of where the students would be ready to go next, both in an academic and socioemotional sense.

These activities included:

- Using an interactive letter
- Creating and decorating a class journal
- Taking a virtual tour of America's Test Kitchen
- Begin a co-created list of safety norms

These activities provided us with insight about, respectively, our students' interests (as conveyed by the interactive letter), favorite foods (as conveyed by the journal decoration activity), background knowledge about the subject of food research (as conveyed by their responses to the video), and knowledge of safety norms in the kitchen (as conveyed by their posters and discussions about the topic). After this, we jumped into cooking, as we were all eager to do.

Upon reflecting on this initial series of activities, however, and also upon observing the way students interacted with the unintentionally useful library in our

science classroom, I felt that we had missed some opportunities to provide students with more access to diverse food texts, and by extension, diverse role models for food writing. I.e., for the class journal collage, we provided back issues of *Bon Appetit*, which featured primarily White models and Western-preferred foods; in retrospect, I could have better mirrored my students by providing additional materials featuring cooks of color from other magazines, as well as specifically-selected resources to mirror my students' identities. I.e., Joanne Chang (a groundbreaking Taiwanese chef), Bryant Terry (an African-American who has written about the African food diaspora, including Dominican food) and Madhur Jaffrey (an Indian food writer and former New York Times critic). Thus, I added two new activities, "Hosting a quotation mixer" and "Listen to This" (introduction to the library), to facilitate student interaction with a teacher-created literacy center or library featuring diverse writers. My hope is that now, thanks to these changes, future students will find themselves browsing texts from the food world that mirror their identities, allowing them to locate themselves in that world, rather than a selection of texts that reinforces a sense of not-belonging in that world.

I made additional changes to this section after noticing that when we jumped into tasting, tension arose around the ways in which our diverse group of children ate and talked about the food we were eating. I.e., during our taste testing experience, students had strong reactions to the umami taste in particular. My Taiwanese student, who uses fish sauce in many dishes at home, liked the umami-flavored sample very much, while other students, hailing from European, Indian and Dominican backgrounds, found it more difficult to like. While some politely expressed their dislike or discreetly spit their unwanted samples into a napkin, others shouted "Ewww!" and ran to spit the food out in

the garbage. I felt this created a negative cultural dynamic in the classroom for the student who enjoyed this flavor at home. It also concerned me to see that my students might not be ready to respectfully try foods with which they were less familiar—which we had planned for them to do throughout the unit in cooking activities and on field trips. As food writer Adam Gopnik (2016) has noted:

Every mouth taste that we ever have becomes a moral taste very quickly. Children ... are like that. They taste something and say “Eww, that’s yucky.”

And you say, “Well, I really like it.”

[And they respond], “Eww, *you’re* yucky! *You’re* gross!”

This tendency of children may be widespread, but I felt we had a duty to attempt to shift their thinking in a more tolerant, open-minded direction. Thus, after I taught this curriculum, I sought out more activities to help students acquire less judgemental language about the food they were eating, and more constructive, open-minded attitudes and behaviors regarding the act of trying a new food.

Teddy the Taster (1969) and *Dinner with the Highbrows* (2014), both of which I encountered later on almost by chance, seemed to offer stories that aligned with these goals. Both books allow children to identify, as readers, with the open-minded and conscientious protagonists, who are both attempting to navigate differences in culture and taste without resorting to judgemental language or behavior.

Later that year, our school’s diversity coordinator, who has a background in theatre, gave me the additional idea of including a role play activity to further prepare students for some of the thornier exchanges they might have around food. (The Anthony

Bourdain video, detailed in the “Don’t Yuck My Yum” activity, provided an additional way to present this idea for students who might be more visual learners.)

Ultimately, I decided to add all of these activities to the early immersion phase of the curriculum, so that when students began to eat together, they would already have been prepared, socially, to engage in that experience without “yucking” someone else’s “yum.”

Finally, there was the issue of kitchen safety. Given my nervousness with a new space, a new group of students, and a new curriculum, I naively tried to address a wide variety of safety rules with my students on a single day, hoping to cover all contingencies. This made for a tedious lesson. I also found that reviewing all the ways in which cooking can be dangerous, before doing any actual cooking, resulted in my unintentionally scaring some students prematurely. As Marion Cunningham (1995) notes, “It is important to advise children always to be careful when handling knives and when using heat, but too much repeated concern can make them timid” (p. XIII). Moreover, everything we discussed during our initial safety discussion still needed to be repeated at the start of our activities and throughout our time in the kitchen, as the children did not remember (or self-regulate) perfectly every time.

Thus, I have updated this activity to reflect a shorter and more student-centered approach to creating kitchen rules that, I hope, will really stick without feeling too tedious. I also hope it will also give students the opportunity to add their own ideas and rules, so that the process is more democratic, less droning-teacher-directed.

That said, I have also included the full list of kitchen safety tips for teacher consumption, so that teachers can pick and choose which safety reminders they will give for each lesson, and ensure that the students in their care remain safe.

Primary Recipe Investigation



As mentioned previously, I selected two recipes to unpack in detail during our initial investigation—that is, combining a single cooking experience with many related ideas and skills from the fields of literacy, math, social studies and science. These two recipes included sauce and bread—which were eventually combined to become pizza. My hope was that once students had acquired the skills and content understandings underpinning these two recipes, they would be ready to engage in other food-focused activities with increasing mastery, as well as increasing independence in terms of directing their own discoveries. (I also hoped they would choose to study vegetables, but this did not happen. Clearly, I have more work to do.)

During our primary recipe investigation, we tried the following activities:

- Guess the bread
- What is yeast?
- Making bread
- Recipe recap
- Five-flavor taste test
- Analyzing a bar graph

- Develop your own pizza sauce recipe
- Going further (We encouraged students to choose additional recipes to investigate)
- Recipe drafting
- Reading *Amelia's Notebook* and *Amelia Hits the Road* as mentor texts (in preparation for field trip writing in food journals)
- Take a field trip
- Interview an expert
- Assemble a recipe collection (we created a blog)
- Potluck party planning
- Cooking for a crowd
- The heat is on!
- Final publishing party & potluck

Later on, I added the following activities to various stages, to include more opportunities for children to build additional background knowledge about both the social and scientific aspects of eating, as well as strong literacy skills regarding reading and writing recipes. I also wanted to provide teachers with more opportunities for assessment.

- Everyone eats bread
- Sweet & savory foods
- Flavor science jigsaw reading
- A recipe for a recipe
- Revising for clarity

- Additional ideas for deepening students' understanding & strengthening their writing
- Read-aloud: *Gai See: What You Can See in Chinatown*
- Editing recipes
- Writing conferences
- Creating an "About Me" section

I added "Everyone eats bread" and "Sweet & savory foods," after observing that I had not thought to include a pre-assessment to determine how students were conceptualizing and describing different categories of food, using their existing vocabulary. I also wanted students to feel they were "discovering" certain properties and categories of food (i.e. yeasted and unyeasted dough) vs. being explicitly told about them first. I felt that adding these steps provided scaffolding that might be missing. That said, these additional activities do add more time and steps to the overall sequence, so teachers may wish to edit the sequence as necessary for the time they have.

Given that students' curiosity was piqued by the taste testing activity, I also added the "Flavor science jigsaw reading" to answer the questions my students raised, in a way that I hoped would be academically rigorous as well as socially engaging for them. (I tested this text with some of my older students first, who liked it but wished they had time to discuss it with peers.)

The other activities on this list, from "a recipe for a recipe" to "writing conferences," were added to create a more structured, workshop-style experience for students as writers, integrating more explicit literacy instruction into this unit, and to improve the quality of the final product. I found that the recipes my students wrote were

serviceable but lacked the nuance I felt they could have provided, had I given as much explicit guidance and attention to the recipes they wrote as I had to the activities in which they actually cooked.

That said, the process itself, rather than the product, is what feels most important to me in this curriculum; it is up to educators to decide how much time they wish to dedicate to one over the other in their respective settings.

Finally, the “About Me” is something I wished to do all along, but jettisoned in order to help students plan the party itself in the end. Upon reflection, I felt that I was missing a final writing piece, something that could have served as an excellent and organic summative self-assessment for students, showing how they had grown over the course of the curriculum in terms of their identities and food knowledge. If I had the chance to do this all over again, I would certainly wish to see more conclusively whether my objectives—to teach children to connect more meaningfully to their identities and abilities, as well as to the identities and abilities of others, through food—were accomplished via my curriculum.

As it stands, the experience I shared with parents at the final potluck served as a helpful indicator of what we had all been able to accomplish together. As the children presented the food they cooked to their parents, it was clear that they had retained the lessons they learned about the language of flavor. They described, for example, how they had wanted to ensure the sauce for the meatballs they made was balanced, with sweet, salty, sour and umami flavors. They shared about how they wanted to create options, too, for different types of eaters with different preferences—i.e., the sibling who only wanted plain pasta, or the father with a sweet tooth for chocolate. This showed that they were

developing a sense of empathy for others, leaving some of their developmental egocentrism behind—and replacing it with a budding sense of tolerance for difference.

Their parents, too, shared with me that their children had seemed to become more open to new flavors at home, and more aware of the impact of food on their wellbeing. One child had begun to notice a negative connection between dairy and her digestion that led to a helpful change in diet. Another child had tried sushi for the first time. And many of them shared a desire to keep on cooking together as a family. Especially now that the children had written their own recipes to try at home—and thus had their own heritage to pass on.

Final Thoughts



Above: a photo taken by two students on a field trip to a local food court using an iPad, later published on the class blog

Teaching children about food is not just a job for me; it's a calling. However, I still find it challenging, for many reasons. That full disclosure feels important to provide here.

Most obviously, there is the challenge of managing the physical demands of cooking. Educators may point out that while a math lesson or a writing conference yields direct academic results and no clean-up, hands-on cooking leaves a mess behind. Even I dread doing the dishes. And for the teacher who values a well-organized classroom or lesson, messes can often feel like the enemy. My hope is that educators can create classroom norms that engage students (and families) in the full array of food-related tasks, including set-up and dishes, not just the "fun stuff."

Then there are the subtler messes that are harder to see, and to clean up. For every story I have heard via my work in the food world about someone's wonderful Italian grandmother and her Sunday sauce, I also hear one about over-boiled Brussels sprouts, hockey-puck pork chops, or some other offending food prepared by a hapless parent, and the dinnertime wars waged over their consumption. For every fawning trend piece I read about the rise of "elevated" Mexican, "elegant" Indian or "fusion" Asian food, I have read and heard multiple accounts of children of color being shamed for the foods they eat: hearing that they are associated with poverty, with bad smells, with an irrevocable Otherness. It may seem tempting to keep all of these potential cultural conflicts locked outside the classroom door. My hope here is to help educators address ways to co-create norms with children that convey respect for all kinds of eaters, and moreover, to help them create materials and habits that actively dismantle the forces of bias and stereotyping in the learning space.

Picky eaters in general present a problem for teachers wishing to teach about food, and many teachers steer clear of lunchtime battles because of this. The research that underscores how an education of the tongue might be undertaken, which has existed for decades, has not always been made widely available (Wilson, 2015). Meanwhile, the methods of expanding children's palates have been investigated and simplified (for example, via the Sapere method; see Koistinen, & Ruhanen, 2009), but they still involve some struggle and heartbreak on behalf of the caregivers involved, as socializing children always has (Wilson, 2015). My hope is that this will shift, with the help of research-backed practices (such as structured taste tests) and nonfiction texts that tackle the facts (and the myths) surrounding picky eating, empowering adults and children to work more constructively together to develop varied palates. My curriculum intentionally includes both, to facilitate this shift.

Then there is the fear of danger. "Real" cooking often involves high heat, sharp tools, and allergies, a terrifying trifecta to contemplate for any adult responsible for a roomful of children. As I have noted, I felt afraid when testing this curriculum, and I still feel nervous every time I teach about food. Yet I also know, through experience, that every food-related challenge can be calmly dealt with via a fact-based understanding of physics and chemistry, as well as a serious commitment to helping students develop self-regulation, confidence and accountability within the kitchen setting. My curriculum aims to help educators address these safety issues, as I know they weigh on all of our minds daily.

Finally, there is one key obstacle I hear from my students and fellow educators: they believe they do not know the first thing about cooking, and don't know where to

start! It is for them that I share my snack time and cafeteria observations, underscoring the idea that even the youngest children do in fact know many things about cooking and food. Because we all have to eat, we all bring funds of knowledge to this discussion (Moll, Amanti, Neff, & Gonzalez, 1992).

I also share my own story, as well as the many stories I know about food luminaries I have come to consider important role models, and I try to find a way to talk about these role models when I teach. For example, it is true that some notable food personalities, like the food writer M.F.K. Fisher (1990) or the author and TV host Anthony Bourdain (2000), came to my profession because of long-standing family connections to food. (It always helps to have French family members!) But many others, like renowned TV chef and cookbook author Julia Child (2006) and bestselling cookbook author J. Kenji Lopez-Alt (2015), came to their profession later in life following childhoods of relatively lackluster meals, as zealous converts come to a new religion. Notably, the latter two devoted long hours to developing cookbooks aimed at adult learners discovering proper cooking techniques for the first time, just like themselves (*Mastering the Art of French Cooking* and *The Food Lab*, respectively). Empowering yourself, then empowering others around food, is a skill you can choose to develop anytime. Stories like Child's (and mine) show that someone who is born a "have not" *vis a vis* food knowledge actually can easily become one who *has*. Like every other seemingly miraculous act that educators perform on a daily basis, it simply takes practice, commitment, passion and good guidance.

In conclusion, my message to educators is this: food is messy, but we have the skills we need to make it safe and enjoyable, too. Despite the downsides, I firmly believe

we still have to proceed. We have discussed the ways in which the status quo has qualitative downsides that should cause educators who are pursuing a kind of non-interventionist strategy to reconsider this position. We have also discussed the ways in which food has massive cultural resonance, rendering it rife with “teachable moments” that present an appealing upside for fans of hands-on education. The curriculum I have designed attempts to navigate a course that acknowledges the physical and emotional threats that cooking together might pose to members of a classroom community, while also mitigating the threats students face if they do *not* cook.

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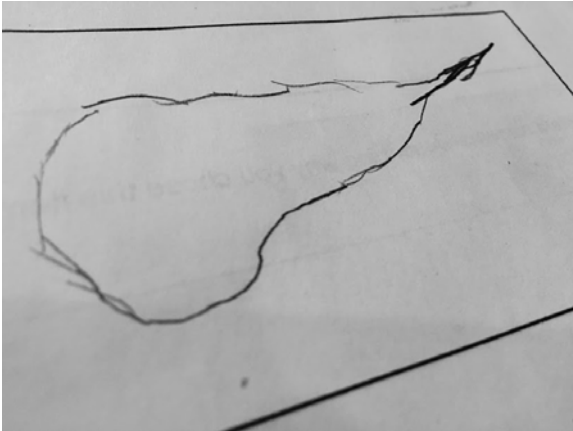
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Left: a sketch of a radish from the farmer's market

Appendix A: Quotation Mixer

Food writing quotation mixer

Simpler quotations

"You need an entire life just to know about tomatoes."— Ferran Adrià, food innovator and chef

"Good music goes with good food." - African Proverb

"Anyone can cook, and most everyone should." - Mark Bittman, cookbook author

"Everything in food is science." - Alton Brown, food scientist and TV host

"Tell me what you eat, and I will tell you who you are."
- Jean Anthelme Brillat-Savarin, 19th century food writer and philosopher

"I think every woman should have a blowtorch."
- **Julia Child**, pioneering TV chef, cookbook author and teacher

"No one is born a great cook, one learns by doing."
- **Julia Child**, pioneering TV chef, cookbook author and teacher

"People who love to eat are always the best people."
- **Julia Child**, pioneering TV chef, cookbook author and teacher

"Nothing is too much trouble if it turns out the way it should."
- **Julia Child**, pioneering TV chef, cookbook author and teacher

Give a man a fish, you have fed him for today. Teach a man to fish, and you have fed him for a lifetime.
- Chinese proverb

"Sometimes, in the deepest moments, there are no words. There is only food."- Roy Choi, chef and cookbook author

"Eat when the food is ready; speak when the time is right."
- Ethiopian Proverb

"A writing cook and a cooking writer must be bold at the desk as well as the stove." - M.F.K. Fisher, food writer and novelist

"You can teach people about cheese, but you cannot teach them how to be happy."- Ina Garten, cookbook author and TV host

"Happiness rarely keeps company with an empty stomach. -Helen Keller, 19th century writer

"The scariest moment is always just before you start." - Stephen King, novelist

"If you want to be a writer, you must do two things above all others: read a lot and write a lot. - Stephen King, novelist

"Start writing, no matter what. The water does not flow until the faucet is turned on." - Louis L'Amour, novelist

"Don't be afraid to do whatever you want. Cooking doesn't have to have rules. I don't like it that way." - Masaharu Morimoto, chef

"Food can bring people together in a way that nothing else could."
- Yotam Ottolenghi, chef and cookbook author

"All you need is love. But a little chocolate now and then doesn't hurt." - Charles Schultz, cartoonist

Food writing quotation mixer: More complex quotations

"Once you start asking what's really going on inside your food while you cook it, you'll find that the questions keep coming and coming, and that the answers will become more and more fascinating."
- **J. Kenji López-Alt**, food scientist and cookbook author

"Food is our common ground, a universal experience." - James Beard, chef

"You're never going to find the perfect city travel experience or the perfect meal without a constant willingness to experience a bad one."

- **Anthony Bourdain**, food writer and TV host

"Always entertain the possibility that something, no matter how squiggly and scary looking, might just be good." - Anthony Bourdain, food writer and TV host

"The extent to which you can walk in someone else's shoes or at least eat their food, it's a plus for everybody. Open your mind, get up off the couch, move."

- **Anthony Bourdain**, food writer and TV host

"Although I don't take myself very seriously, I do take my work extraordinarily seriously." - Alton Brown, food scientist and TV host

"I can't talk about anything or write about anything if I don't understand it. So a lot of the stuff that I go through and a lot of the time that I spend is understanding." - Alton Brown, food scientist and TV host

"In baking, as in life, simple things are best." - Joanne Chang, chef and cookbook author

"Find something you're passionate about and keep tremendously interested in it." - Julia Child, pioneering TV chef, cookbook author and teacher

"One of the secrets, and pleasures, of cooking is to learn to correct something if it goes awry; and one of the lessons is to **grin and bear it if it cannot be fixed.**" - **Julia Child**, pioneering TV chef, cookbook author and teacher

"Never say you'll 'never' try something, because one day you may change your mind." - Dominican proverb

"It seems to me that our three basic needs, for food and security and love, are so mixed and mingled and entwined that we **cannot straightly think of one without the others.**" - M.F.K. Fisher, food writer

"My writer's notebook never judges me. It understands that becoming a writer takes a long time, and we might as well have a little fun along the way." -Ralph Fletcher, writing teacher

"My day dreams become my inspiration, and I do whatever I can to make them a reality. - Madhur Jaffrey, food writer and cookbook author

"Almost all good writing begins with terrible first efforts. You need to start somewhere." - Anne Lamott, writer

"After nourishment, shelter and companionship, stories are the thing we need most in the world."- Phillip Pullman, novelist

"Access to healthy food is a human rights issue." - Bryant Terry, chef and cookbook author

"If you can't feed a hundred people, then just feed one."
-Mother Theresa, activist

"Cooking requires confident guesswork and improvisation--meaning experimentation and substitution, dealing with failure and **uncertainty in a creative way.**"- Paul Theroux, writer

"Black women did much of the cooking in early American kitchens [and] they did so with the art and aptitude of today's trained professionals." - Toni Tipton-Martin, writer

"The opportunity here in the U.S. is so unique because we are so diverse, with so many different cultures living together. Christians, Jews, Hindus, Muslims and Buddhists, all with their own connections to the spiritual aspects of food, and with lessons that we can learn from each other." - Marcus Samuelsson, chef

Appendix B: Safety Posters Template

How can we keep our **food**
safe in the kitchen?

How can we keep our
bodies safe in the
kitchen?









How can we keep our **tools**
safe in the kitchen?

How can we keep people's
feelings safe in the
kitchen?

Appendix C: Bread Guessing Game

Names _____

Working with a partner, test yourself: how many of these bread dishes can you name? The word bank below may help.

 <p>_____</p>	 <p>_____</p>
 <p>_____</p>	 <p>_____</p>
 <p>_____</p>	 <p>_____</p>
 <p>_____</p>	 <p>_____</p>

Pizza
Concha
Matzoh
Pita

Naan
Injera
Croissant
Baguette

BREAD GUESSING GAME HINTS

The word "concha" in Spanish means "shell."

The word "croissant" is related to the English word "crescent," which is the shape of the moon when it's not quite half full.

The word "baguette" is related to the Italian word "bachetta," which means "a small rod," and the Latin word baculum, which means "a stick."

In Ethiopia, injera is used as a plate and an eating utensil, as well as a side dish.

BREAD GUESSING GAME HINTS

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BREAD GUESSING GAME HINTS

The word "concha" in Spanish means "shell."

The word "croissant" is related to the English word "crescent," which is the shape of the moon when it's not quite half full.

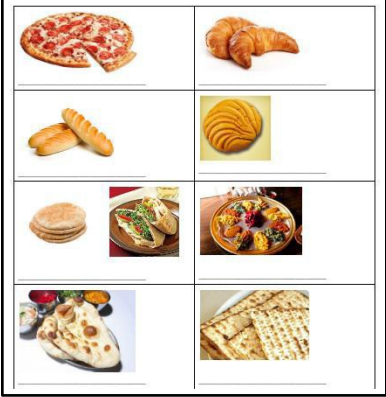
The word "baguette" is related to the Italian word "bachetta," which means "a small rod," and the Latin word baculum, which means "a stick."

In Ethiopia, injera is used as a plate and an eating utensil, as well as a side dish.

Name _____

Using social studies to write about food

In our class, we talked about the following foods, and how we came to learn about them. Reading and researching about people is known as social studies.

	<p>From top left, clockwise:</p> <ul style="list-style-type: none"> ● Pizza ● Croissant ● Baguette ● Concha ● Pita ● Injera ● Matzoh ● Naan
---	---

Our group of food writers decided that people can learn about food in these ways:

- ★ _____
- ★ _____
- ★ _____
- ★ _____
- ★ _____
- ★ _____
- ★ _____

Other fun social studies facts we learned:

- ❖ The word "concha" in Spanish means "shell."
- ❖ The word "croissant" is related to the English word "crescent," which is the shape of the moon when it's not quite half full.
- ❖ The word "baguette" is related to the Italian word "bachetta," which means "a small rod," and the Latin word "baculum," which means "a stick."
- ❖ In Ethiopia, injera is used as a plate and an eating utensil, as well as a side dish.

Name _____

Using social studies to write about food

Many students in our class have never tried **injera** bread. They have a lot of questions about it.



What kinds of things might someone do to learn more about a food they've never tried, like injera, without using a book or the Internet? List as many ideas as you can.

Appendix D: What is Yeast?

What is Yeast?¹



How are breads, blue cheese and antibiotics related?

They're all made with the help of yeast! Yeast are single-celled *fungi*, a kind of living being that's not quite a plant and not quite an animal. Other kinds of fungi include the mushrooms at the supermarket, the molds that make blue cheese taste yummy (and stinky), and the molds that produce antibiotic medicines for people and animals. Yeast cells are egg-shaped and can only be seen with a microscope. Inside every ounce of yeast in a packet, there are billions and billions of cells.

Yeast have a sweet tooth

Just like us, yeast need to eat in order to have energy to grow. Their favorite food is sugar in its various forms: sucrose (beet or cane sugar), fructose and glucose (found in honey, molasses, maple syrup and fruit), and maltose (made from the starch in flour).

How is bread like a balloon?

Just like us, once yeast eat, they sometimes create gas! And it's a good thing they do. Yeast release carbon dioxide (gas) and ethyl alcohol in a process called *fermentation*. When they release these two things into bread dough, the stretchy gluten in dough holds them in. As the yeast eat and create more gas, the dough "rises," blowing up like a balloon filled with air. This process creates the fluffy texture of baked bread, and also adds some tasty aromas and flavors.

QUESTIONS

Answer with your partner.

¹ Adapted for student use from: <http://redstaryeast.com/science-yeast/what-is-yeast/>

Names _____

Yeast are:

- Plants
- Animals
- Fungi

Check all the types of fungi-related foods and medicines you see below.

- Mushrooms at the farmer's market
- Frozen broccoli in the supermarket freezer
- Blue cheese at the cheese counter
- Cold & cough medicine at the pharmacy
- Antibiotics at the pharmacy

Check all the kinds of things a yeast cell might like to eat.

- Beet sugar
- Pencils
- Honey
- Maple syrup
- Ice
- Fruit
- Flour
- Your homework

How does yeast change the shape of bread? Explain.

Appendix E: Yeasted and Unyeasted Bread Recipes

Yeasty, Beasty Basic Flatbread²

Flatbread goes by many names! Matzoh. Pita. Tortilla. Focaccia. Naan. Injera. Roti. Arepa. Lavash. Made with wheat and water, it feeds the world; add yeast, a tiny beast that eats sugar and creates gas, and you may see big changes in your bread...



Materials	Ingredients
<ul style="list-style-type: none"> <input type="checkbox"/> Large bowl (for mixing) <input type="checkbox"/> Measuring cups and spoons (for flour and salt) <input type="checkbox"/> Liquid measuring cup (for yeast and oil) <input type="checkbox"/> Wooden spoon (for stirring) <input type="checkbox"/> Damp towel or plastic wrap (for covering dough) <input type="checkbox"/> Cutting board (for kneading dough) <input type="checkbox"/> Butter knife (for dividing dough) <input type="checkbox"/> Plastic freezer bags (for freezing leftover dough) <input type="checkbox"/> Rolling pin (for flattening dough) <input type="checkbox"/> Oven <input type="checkbox"/> A grown-up to help you 	<ul style="list-style-type: none"> <input type="checkbox"/> 1 teaspoon dry yeast, dissolved in $\frac{1}{2}$ cup warm (not hot!) water <input type="checkbox"/> $\frac{1}{4}$ teaspoon salt <input type="checkbox"/> 1 $\frac{1}{2}$ cups flour, divided: <ul style="list-style-type: none"> <input type="checkbox"/> 1 $\frac{1}{4}$ cup for the dough <input type="checkbox"/> $\frac{1}{4}$ cup for covering the cutting board so the dough won't stick <input type="checkbox"/> 2 tablespoons olive oil, divided: <ul style="list-style-type: none"> <input type="checkbox"/> 1 tbsp for making the dough <input type="checkbox"/> 1 tbsp for brushing onto the flatbread before baking

² Adapted from "Pretend Soup" by M. Katzen (1994).

Instructions

Step 1: Make the dough

- Put yeast into the warm cup of water and let it sit for 5 minutes. Make sure it's not too hot so you don't hurt the yeast.
- Mix together 1 $\frac{1}{4}$ cup flour and $\frac{1}{4}$ teaspoon salt in a bowl.
- Add oil and the water with the yeast, and mix with a wooden spoon for 2 minutes until it forms a ball.

Step 2: Knead the dough

- Sprinkle a cutting board with flour (about $\frac{1}{4}$ cup).
- Put the dough on top.
- Knead it for 5 minutes (pushing it down and away from you with flat palms, then folding it back towards you).

Step 3: Set it aside (but keep an eye on it!)

- If you are using the dough today, place it inside a bowl turned upside down. This is called resting the dough.
 - To get it ready, put a little olive oil in the bowl before you place the dough inside.
 - Cover with plastic wrap or a damp towel so it doesn't dry out.
- If you are using the dough later, put it inside a container and set it in the refrigerator. You can also freeze it and defrost it later by putting it back on the counter and waiting until it's soft.

Step 4: Get the dough ready to bake

- When you are ready to make your flatbread, ask a grownup to help you get the oven ready. Preheat it to 400F.
- Spread flour on a cutting board, then put the dough on it. Push down on the dough and out toward the edges so it makes a big disc shape (like a Frisbee).
- You can make 1 big pizza now, or cut it into 4-8 pieces of dough for mini-pizzas, using a safe knife like a butter knife.
- Roll your dough into a ball. Then use a rolling pin to flatten it out. It should be about $\frac{1}{4}$ inch tall, or about as high as a pencil laid flat.
- Spread a little olive oil and salt onto the top and bottom of the flatbread.
- Oil a baking tray and put your dough on it. Put your toppings on top and bake for about 20 minutes, or until brown and bubbly on top.

Basic Flatbread³ (Control Group)

Flatbread goes by many names! Matzoh.
Pita. Tortilla. Focaccia. Naan.
Injera. Roti. Arepa. Lavash. Made with
wheat and water, it feeds the world!



Materials	Ingredients
<ul style="list-style-type: none"> <input type="checkbox"/> Large bowl (for mixing) <input type="checkbox"/> Measuring cups and spoons (for flour and salt) <input type="checkbox"/> Liquid measuring cup (for yeast and oil) <input type="checkbox"/> Wooden spoon (for stirring) <input type="checkbox"/> Damp towel or plastic wrap (for covering dough) <input type="checkbox"/> Cutting board (for kneading dough) <input type="checkbox"/> Butter knife (for dividing dough) <input type="checkbox"/> Plastic freezer bags (for freezing leftover dough) <input type="checkbox"/> Rolling pin (for flattening dough) <input type="checkbox"/> Oven <input type="checkbox"/> A grown-up to help you 	<ul style="list-style-type: none"> <input type="checkbox"/> ¼ teaspoon salt <input type="checkbox"/> 1 ½ cups flour, divided: <ul style="list-style-type: none"> <input type="checkbox"/> 1 ¼ cup for the dough <input type="checkbox"/> ¼ cup for covering the cutting board so the dough won't stick <input type="checkbox"/> 2 tablespoons olive oil, divided: <ul style="list-style-type: none"> <input type="checkbox"/> 1 tbsp for making the dough <input type="checkbox"/> 1 tbsp for brushing onto the flatbread before baking

³ Adapted from "Pretend Soup" by M. Katzen (1994).

Instructions

Step 1: Make the dough

- Mix together 1 $\frac{1}{4}$ cup flour and $\frac{1}{4}$ teaspoon salt in a bowl.
- Add oil and the water with the yeast, and mix with a wooden spoon for 2 minutes until it forms a ball.

Step 2: Knead the dough

- Sprinkle a cutting board with flour (about $\frac{1}{4}$ cup).
- Put the dough on top.
- Knead it for 5 minutes (pushing it down and away from you with flat palms, then folding it back towards you).

Step 3: Set it aside (but keep an eye on it!)

- If you are using the dough today, place it inside a bowl turned upside down. This is called resting the dough.
 - To get it ready, put a little olive oil in the bowl before you place the dough inside.
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Step 4: Get the dough ready to bake

- When you are ready to make your flatbread, ask a grownup to help you get the oven ready. Preheat it to 400F.
- Spread flour on a cutting board, then put the dough on it. Push down on the dough and out toward the edges so it makes a big disc shape (like a Frisbee).
- You can make 1 big pizza now, or cut it into 4-8 pieces of dough for mini-pizzas, using a safe knife like a butter knife.
- Roll your dough into a ball. Then use a rolling pin to flatten it out. It should be about $\frac{1}{4}$ inch tall, or about as high as a pencil laid flat.
- Spread a little olive oil and salt onto the top and bottom of the flatbread.
- Oil a baking tray and put your dough on it. Put your toppings on top and bake for about 20 minutes, or until brown and bubbly on top.

Appendix F: Recipe Recap

Name _____

RECIPE RECAP: MAKING BREAD

Choose at least 3 questions below to answer on the lines below. Make an X in the box next to the questions you plan to answer. Please use complete sentences. You can answer more if you have time.



- What did you learn about bread during our experiment?
- What was your favorite part about making bread?
- What was the most challenging part about making bread?
- What surprised you about making bread?
- Will you make this recipe again? Why or why not?
- What would you change or add to this recipe to make it better? (Would you add toppings?)
- What questions do you still have about bread?

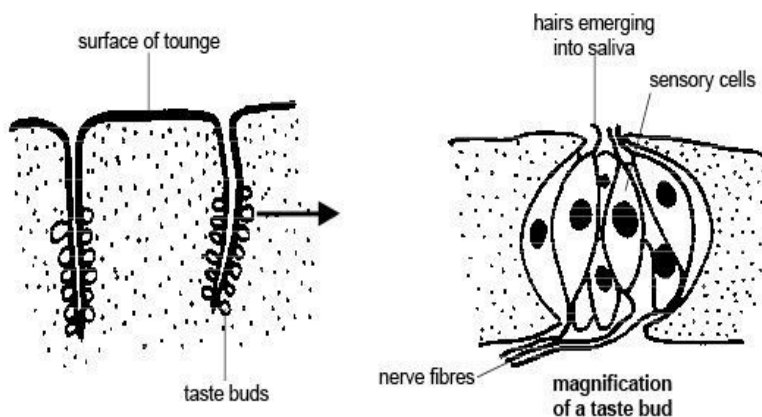
Appendix G: What Are Taste Buds? (Text 1)

What Are Taste Buds?⁴

Taste buds—located inside the little bumps on your tongue—let you experience tastes that are sweet, salty, sour, bitter and umami.

How exactly do your taste buds work? They have bumps called papillae (puh•-PILL-•ee). Most of them contain taste buds. Taste buds have small hairs called microvilli (mye•kro-•VILL-•eye). Those tiny hairs send messages to the brain about how something tastes, so you know if it's sweet, sour, bitter, salty, or umami.

The average person has about 10,000 taste buds. You get new ones every 2 weeks or so. But as you get older, your body replaces less of them. So an older person may only have 5,000 working taste buds compared to a younger person. (If they have a history of smoking, they may have even less—smoking destroys taste buds.)



This is why many kids are “picky” but “grow out of it,” and why many grownups don’t understand why kids refuse certain foods: because things taste less intense to you as you get older.

Your nose also works hard to help you taste. While your tongue has taste buds, your nose has olfactory (ohl•FAK•tuh•ree) receptors inside the uppermost part of the nose. These contain special cells that help you smell, and send messages to the brain about what you are smelling.

⁴Adapted from KidsHealth.org, S. Dowshen (2013)

This is why food doesn't taste as good, or have such a strong taste, when you have a cold or allergies. When your nose is stuffy, your nose and brain can't cooperate. That's because while you're chewing, the food releases chemicals that travel up into your nose from your throat. Your nose sends signals to your brain. Then, your brain mixes the signals together, so that you feel happy when you smell and taste your favorite treats, and you feel less happy when you smell and taste a food you don't like.

You can test this fact by holding your nose and closing your eyes, then trying two ingredients that have the same texture (like an apple and a potato). You might notice a few differences between the foods, thanks to your tongue, but you might also find that it is hard to tell the difference fully without your nose.

So now you know how taste really works: it doesn't just involve your tongue, it involves your nose and your brain too!

(Image courtesy of Ruth Lawson, via Wikimedia Commons.)

Appendix H: The Science of Flavor (Text 2)

The Science of Flavor

What are we made of?
 What is food made of?
 The answer to both questions:
 chemicals.

Chemicals (KEM-i-kuls) are tiny pieces of "stuff," or matter. They mix together and lock together like Legos to build bigger things, like carrots, cats, spaghetti sauce and students. Chemical mixtures can be solid (like salt and sugar), liquid (like lemon juice or vinegar), or gas (like the steam coming out of a hot pot of soup).



Chemicals act in different ways when they are mixed together, when they are heated or cooled down, and when they go inside of our bodies.

Our tongues have special receptors for each chemical-based taste; think of receptors like keyholes and flavor chemicals as keys that fit together when we recognize a flavor.

Below are some facts about the chemicals that give us our favorite tastes.

Sweetness

- Sugar makes foods taste sweet.
- Our bodies get energy from sugar, and store extra sugar as fat to keep us warm.
- A little bit of sugar can help power our bodies, but too much sugar can give us headaches, cavities, and other health problems.
- Fruits, vegetables, pasta, bread, meat and milk all contain sugar, and of course, so do your favorite desserts. There are many different kinds of sugars.
- Honey is one of the healthiest sweeteners cooks can use, because it contains chemicals that fight germs!



- If a food tastes too sweet to you, you can balance it with bitter or sour flavors. (Salt might make it taste even more sweet.)

Sourness

- Acids are chemicals that make food taste sour.
- Acids are so strong that they can break down other chemicals, the way soap breaks down dirt.
- Our stomachs are like big bowls of acid that break down food into smaller pieces, which makes them easier for our bodies to use.
- A little bit of acid helps our bodies to digest our food, but too much can give us a tummyache.
- Citrus fruits like oranges, grapefruit, lemon and lime are naturally sour because they contain citric acid.
- Foods like balsamic vinegar, pickles and sourdough bread are sour because they are fermented. In fermented foods, yeast (small living things) eat the sugar in the food, making it less sweet, and then "burp" sour acids. (Don't let that gross you out, though: these sour flavors contain lots of vitamins and help keep germs from growing on the food.)
- If a food tastes too sour to you, you can balance it by adding sweet and bitter ingredients.



Saltiness

- As you might guess, salt makes foods taste salty!
- Salt is a solid mixture of chemicals that helps your body stay healthy and also helps keep germs from growing on food.
- Soy sauce is a very salty liquid mixture of wheat and soybeans and can add salty flavor to food.
- A little bit of salt helps our bodies stay balanced and healthy, but too much salt in our food can make us feel very thirsty. (Ocean water is too salty for us to safely drink.)
- If a food tastes too salty to you, you can balance it by adding water and sugar.



Bitterness

- Bitterness can sometimes taste like sourness to us. The difference: acids make foods sour, while bitter flavors can come from many different chemicals. (Think about the difference between a grapefruit's inside, which is sour thanks to acid, and the peel, which is bitter.)
- Many plants produce bitter chemicals (in places like their peels or leaves) to make themselves taste bad and to stop us from eating them.
- Scientists think humans learned to eat some bitter foods because their "stay away" chemicals, when eaten, help keep germs away from us!
- We all have more taste buds for bitter flavors than we do for other flavors.
- Some people have many more taste buds for bitterness and can be more sensitive to these flavors. If you are a "picky eater," you might be one of these "super-tasters!"
- If a food tastes too bitter to you, you can balance it by adding salt and fat (like olive oil).



Umami

- Once, many people thought there were only four tastes (the ones listed above). Then a Japanese scientist named Kikunae Ikeda discovered that there was another important chemical called glutamate that created a flavor that was not quite sweet, sour, salty or bitter. He called this flavor "umami," which means "yummy" in Japanese.
- Glutamate can appear in many foods naturally, like seaweed, anchovies, asparagus, mushrooms and tomatoes.
- Adding heat to other foods can make them taste more umami. For example, cooking meat on a stove or drying tomatoes in the sun can bring out their umami tastes.
- Fermenting or aging foods can also make them taste umami.
- Glutamate-rich ingredients can bring balance and "yumminess" to many dishes. This is one reason why we love pizza topped with Parmesan cheese and tomato sauce-both ingredients are full of umami!



-- By Ryan Cherecwich

Appendix I: Taste Test Recording Sheet

Name _____

TASTE TESTING

For each taste, circle the face that best matches your feeling about this flavor. Then jot notes. As you write, consider these questions:

- What **sensory words** (i.e. describing taste or smell) could you use to describe these flavors?
- What **feeling words** (i.e. happy, upset) could you use to describe how you feel about these flavors?
- What **other foods** does this taste remind you of?

Sample 1

?	?	?	?	?
---	---	---	---	---

Notes: _____

Sample 2

?	?	?	?	?
---	---	---	---	---

Notes: _____

Sample 3

?	?	?	?	?
---	---	---	---	---

Notes: _____

Sample 4

?	?	?	?	?
---	---	---	---	---

Notes: _____

Sample 5

?	?	?	?	?
---	---	---	---	---

Notes: _____

Sample 6

?	?	?	?	?
---	---	---	---	---

Notes: _____

Circle the number of your favorite flavor: 1 2 3 4 5 6

Appendix J: Recipe Recording Sheet

NAME _____

MY SAUCE RECIPE

MY SAUCE NAME _____

For my tomato sauce recipe, I added:

- 1 peeled whole tomato (from a 28 ounce can)
- _ teaspoons of olive oil
- _ teaspoons of **sweet** _____
(write ingredient here)
- _ teaspoons of **sour** _____
- _ teaspoons of **salty** _____
- _ teaspoons of **bitter** _____
- _ teaspoons of **umami** _____
- _ teaspoons of **spicy** _____

FLAVOR WORDS

- Sweet: honey, maple syrup
- Sour: balsamic vinegar, lemon juice
- Salty: sea salt, soy sauce, tamari
- Bitter: tomato paste, Vegemite
- Umami: Parmesan cheese, fish sauce, miso, mushrooms
- Spicy: Tabasco or sriracha

Appendix K: Tomato Sauce, Two Ways

Tomato Sauce, Two Ways⁵

In France, they top flatbread with onions and bacon. In Greece, with vegetables and grilled meat. In the Caribbean, India and Ethiopia, with tasty stews and sauces. But when bread is topped with tomato and cheese, it becomes **pizza**. This recipe helps



you try two ways of making it: a basic sauce with only 3 ingredients (great for school nights), and a “five flavor” sauce experiment to keep things interesting (great for weekend taste testing!).

<p>Materials</p> <ul style="list-style-type: none"> <input type="checkbox"/> Can opener <input type="checkbox"/> Fork <input type="checkbox"/> Wooden spoon <input type="checkbox"/> Cutting board <input type="checkbox"/> Butter knife <input type="checkbox"/> Big bowl <input type="checkbox"/> Small bowls (if desired) <input type="checkbox"/> Microwave (or stove) <input type="checkbox"/> A grown-up to help you with the microwave (or stove) <input type="checkbox"/> Spoon 	<p>Ingredients (Basic)</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 28-oz can of peeled whole tomatoes <input type="checkbox"/> 4 tablespoons of olive oil <input type="checkbox"/> 1 teaspoon salt <p>Ingredients (Five-Flavor)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sweet: Agave syrup, cane sugar <input type="checkbox"/> Sour: Balsamic vinegar, minced garlic <input type="checkbox"/> Salty: sea salt, soy sauce <input type="checkbox"/> Bitter: tomato paste, basil, oregano <input type="checkbox"/> Umami: Parmesan cheese, fish sauce, sauteed mushrooms
--	--

⁵ Adapted from “The Food Lab,” by J.K. Alt-Lopez (2015).

Steps: Basic sauce

1. Ask a grown-up to help you open the can of tomatoes with a can opener.
2. Smash the tomatoes with a fork.
3. Add the olive oil and salt, and stir with a wooden spoon.
4. Cook the sauce by putting the bowl in the microwave for about 5 minutes, or on medium in a pot on the stove for about 10. (Be sure to stop in the middle to check it and stir, and cover it so it doesn't splatter all over.)

Steps: Five-flavor sauce

1. If you want to test out different flavors, take 5 small bowls and put one tomato in each, with its own tasting spoon (or more, if many people are tasting).
2. Label them: sweet, sour, salty, bitter and umami. Put ingredients from list above on a table, and add just one to each tomato. For example, add only salt to one tomato, and only sugar to another.
3. Do a taste test. Notice how the sour, sweet, or salty ingredient changes the taste of each tomato. Be sure not to use the same spoon for more than one bowl.
4. In a bigger bowl, start to combine the tomatoes, tasting a little each time a new flavor is added. How does the taste change when flavors are combined? Does the new sauce need more of one flavor or another to taste good to you?
5. When you are ready to use your sauce, be sure to heat it up on a stove or microwave to kill any germs added during your tasting process.
6. Use a spoon to spread your sauce over the top of the flatbread. Sprinkle with mozzarella cheese if you like.
5. Heat and eat! (See crust instructions for baking tips.)



Appendix L: Recipe Writing Graphic Organizer

Name _____

MY RECIPE - GRAPHIC ORGANIZER

Title of my recipe:

<p>My introduction</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>

<p>My materials</p> <ul style="list-style-type: none">• _____• _____• _____• _____• _____• _____	<p>My ingredients</p> <ul style="list-style-type: none">• _____• _____• _____• _____• _____• _____
---	---

My instructions

1) -----

2) -----

3) -----

4) -----

5) -----

6) -----

7) -----

8) -----

Appendix M: Revising Checklists (Self, Peer, Teacher)

Name _____ **Revising Checklist-My writing**

PARTS OF MY WRITING

My recipe focuses on the topic and has all the parts I need:

- an introduction (written in complete sentences)
- a list of materials
- a list of ingredients
- a list of steps (written in complete sentences)

ORGANIZATION

I help my reader to understand my recipe by:

- introducing my recipe in a way that helps the reader imagine what they will make
- providing all the materials and ingredients they will need, in an order that makes sense
- writing all the instructions, using linking words like "first," "then" and "next" to help them understand the order of steps

Where I glow:

Where I can grow:

What I can do next (or where I need help):

Name _____ **Revising Checklist-My peer's writing**
 I read _____'s writing

PARTS OF YOUR WRITING

Your recipe focuses on the topic and has all the parts you need:

- an introduction (written in complete sentences)
- a list of materials
- a list of ingredients
- a list of steps (written in complete sentences)

ORGANIZATION

You help me as a reader to understand your recipe by:

- introducing your recipe in a way that helps me imagine what you will make
- providing all the materials and ingredients I would need, in an order that makes sense
- writing all the instructions, using linking words like "first," "then" and "next" to help me understand the order of steps

Where you glow:

Where you can grow:

What you can do next (or where you may need help):

Teacher: _____ **Revising Checklist-My students' writing**
 I read _____'s writing

PARTS OF YOUR WRITING

Your recipe focuses on the topic and has all the parts you need:

- an introduction (written in complete sentences)
- a list of materials
- a list of ingredients
- a list of steps (written in complete sentences)

ORGANIZATION

You help me as a reader to understand your recipe by:

- introducing your recipe in a way that helps me imagine what you will make
- providing all the materials and ingredients I would need, in an order that makes sense
- writing all the instructions, using linking words like "first," "then" and "next" to help me understand the order of steps

Where you glow:

Where you can grow:

What you can do next (and **where I can help**):

Appendix N: Editing Checklists (Self, Peer, Teacher)

Name _____ **Editing Checklist-My writing**

- 5 points: I re-read my work using COPS and made changes to help my reader by:
- Checking C: my capitalization
 - Checking O: for missing or misplaced words
 - Checking P: my punctuation
 - Checking S: my spelling, including using the word wall below, and/or a spelling dictionary when needed
 - My writing is error-free.
- 4: I re-read my work and made changes to help my reader by thinking about capitalization and punctuation, but left out OR misspelled important words. I circled my errors.
- 3: I re-read my work, but still made some mistakes with capitalization and/or punctuation, and left out AND misspelled important words. I circled my errors.
- 2: I re-read my work, but did not make any changes to my work. It has more than one error. I circled my errors.
- 1: I did not re-read my work, and it has more than one error. I did not circle my errors.

My score: _____

TOTAL SCORE: (____/5)

Word wall for this assignment

Food words	Flavor words	Cooking words
- Tomatoes	- Sweet	- Bowl
- Olive oil	- Sour	- Spoon
- Honey	- Salty	- Teaspoon
- Sugar	- Bitter	- Measure
- Syrup	- Umami	- Mash
- Vinegar	- Spicy	- Stir
- Lemon juice	- Delicious	- Taste
- Soy sauce	- Yummy	
- Tomato paste		
- Parmesan cheese		
- Fish sauce		
- Bread		

Name _____ **Editing Checklist-My peer's writing**
 I read _____'s writing

- 5 points: You used COPS and made changes to help me as a reader by:
- Checking C: your capitalization
 - Checking O: for missing or misplaced words
 - Checking P: your punctuation
 - Checking S: your spelling, including using the word wall below, and/or a spelling dictionary when needed
 - Hooray! Your writing is error-free.
- 4: You re-read your work and made changes to help me as a reader by thinking about capitalization and punctuation, but left out OR misspelled important words. I circled these to help you.
- 3: You re-read your work, but still made some mistakes with capitalization and/or punctuation, and left out AND misspelled important words. I circled these to help you.
- 2: You re-read your work, but did not make any changes to your work. It has more than one error. I circled these to help you.
- 1: You did not re-read your work, and it has more than one error. I circled these to help you.

Your score: _____

TOTAL SCORE: (____/5)

Word wall for this assignment

Food words	Flavor words	Cooking words
- Tomatoes	- Sweet	- Bowl
- Olive oil	- Sour	- Spoon
- Honey	- Salty	- Teaspoon
- Sugar	- Bitter	- Measure
- Syrup	- Umami	- Mash
- Vinegar	- Spicy	- Stir
- Lemon juice	- Delicious	- Taste
- Soy sauce	- Yummy	
- Tomato paste		
- Parmesan cheese		
- Fish sauce		
- Bread		

Name _____ **Editing Checklist-My student's writing**

I read _____'s writing

- 5 points: You used COPS and made changes to help me as a reader by:
- Checking C: your capitalization
 - Checking O: for missing or misplaced words
 - Checking P: your punctuation
 - Checking S: your spelling, including using the word wall below, and/or a spelling dictionary when needed
 - Hooray! Your writing is error-free.
- 4: You re-read your work and made changes to help me as a reader by thinking about capitalization and punctuation, but left out OR misspelled important words. I circled these to help you.
- 3: You re-read your work, but still made some mistakes with capitalization and/or punctuation, and left out AND misspelled important words. I circled these to help you.
- 2: You re-read your work, but did not make any changes to your work. It has more than one error. I circled these to help you.
- 1: You did not re-read your work, and it has more than one error. I circled these to help you.

Your score: _____

TOTAL SCORE: (____/5)

Word wall for this assignment

Food words	Flavor words	Cooking words
- Tomatoes	- Sweet	- Bowl
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- Vinegar	- Spicy	- Stir
- Lemon juice	- Delicious	- Taste
- Soy sauce	- Yummy	
- Tomato paste		
- Parmesan cheese		
- Fish sauce		
- Bread		

Appendix O: Cooking for a Crowd: Recipe Adjustment Organizer

Name _____

Appendix P: Student Work Release Form

Dear families of our fabulous food writers,

Greetings! As you may know, our Food Blogging class this semester is a pilot project for our after school program. Our goal was to teach key concepts in literacy, math, science, social studies and nutrition via an interdisciplinary, hands-on food curriculum. We have learned a great deal alongside your students and are grateful for their thoughtful input on the course. We are now interested in sharing what we have learned with a larger educational community so that other teachers may benefit from having access to this curriculum.

This letter is to request your permission to share certain artifacts and ideas from the Food Blogging course (without any identifying information about our students). These artifacts, along with the original curriculum we wrote for this course, will be presented to the Bank Street learning community as part of my Integrated Master's Project. This project represents the culmination of my dual degree program in literacy development and childhood education.

In summary:

On the attached form, we request your permission to share the following:

Student work samples
Student ideas and conversation excerpts

These materials may be shared in a paper and curriculum that will be publicly shared with other educators (in which children's names and other identifying details will not appear).

This form can be scanned & signed or returned in person to the After School office on or before December 14.

All of these materials will be archived online and will be available to be viewed and used within and outside of the Bank Street community. Ryan will provide you with information about accessing these materials at the conclusion of the project. **Note: You may withdraw your consent to have your children's materials featured at any time.**

Please know that we value your privacy and that your affirmative consent to feature student work from this course is entirely optional.

Thank you again for the privilege of working with your children.

Best,
Ryan Cherecwich

Student Release Form

*(to be completed by the parents/legal guardians of minor students
involved in this project)*

Student Name:

I am the parent/legal guardian of the child named above. I have read and understand the project description given in the letter provided with this form, and agree to the following:

(Please **check** the appropriate box below.)

- I DO give my permission to share images of student work in materials that may be publicly shared with other educators (in which children's names and other identifying details will not appear). understand that may withdraw my consent at any time.
- I DO NOT give permission to you to include information from the course in the scenarios described above.

Signature of Parent or Guardian:

_____ **Date:** _____