If You Serve it, Will They Come?

Farm-to-school lessons from the Wisconsin Homegrown Lunch Project




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Executive summary

The last decade has seen rapid growth in the number of farm-to-school initiatives in the United States. Despite the proliferation of farm-to-school programs and the significant energy and resources that have gone into their implementation, there have been few systematic assessments of these initiatives.

We use the experience of the Wisconsin Homegrown Lunch Project, a farm-to-school project in Madison, Wisconsin, as a lens through which to identify structural challenges faced by all farm-to-school initiatives and examine a variety of key tactical issues that are likely to be confronted during their implementation. We confirm that these initiatives can facilitate the acceptance and consumption of fresh vegetables by elementary school children. However, we find that the possibilities for connecting the land and the lunchroom are seriously constrained by the structure of most existing school lunch programs. These constraints include the overarching food culture, the quasi-privatized character of most school food services, the degree of industrialization of many school food services, issues of price, procurement and supply, and the need for processing facilities.

Through the Wisconsin Homegrown Lunch project, we learned that enthusiastic leadership from the food service director is critical to the success of a farm-to-school project. A cooperative approach with food service staff needs to be complemented by judicious application of external pressures. There are promising opportunities for students to consume fresh foods in places other than the cafeteria. Finally, an educational component is as important a part of a farm-to-school program as the connections between farmers and the food service.

We hope that this report will initiate a wider discussion of how farm-to-school programs are performing and what contributions they are making to the development of a sustainable food system.

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> I didn't believe the prevailing wisdom – that kids won't eat high-quality fresh fruits and vegetables if they are readily available. I've always believed that one of the reasons kids do not eat fresh fruits and vegetables is because they don't have the opportunity to do so. So I figured, let's give them an opportunity and see what happens. So in the 2002 Farm Bill, we provided fresh fruits and vegetables to a little over 100 schools in four states and one Indian reservation. And you know what? My hunch turned out to be correct.
>
> —Senator Tom Harkin, September 27, 2005[1]

Senator Harkin's faith in the willingness of American children to consume fruits and vegetables is shared by those who are involved in organizing what have come to be known in the United States as "farm-to-school" programs. With some qualification, such faith is justified. Given the opportunity, and under the right circumstances, children will indeed welcome fresh fruits and vegetables and consume them with relish at school. However, creating those opportunities and circumstances is no simple matter.

The last decade has seen rapid growth in the number of farm-to-school initiatives in the U.S. A 2004 report from the Community Food Security Coalition counted 387 programs in 22 states, and those numbers have surely increased over the past three years.[2] There is significant interest in, and even passion for, farm-to-school advocacy because these programs integrate children's welfare and sustainable farming. Prominent supporters such as luminary chef Alice Waters have brought farm-to-school issues much popular attention. As a result, farm-to-school has emerged as one of the more conspicuous contemporary features of the overarching movement for a sustainable food system. Moreover, Senator Harkin's inclusion of support for farm-to-school projects in the 2002 Farm Bill, and his effort to extend such provisions to the 2007 bill, show public support for translating concern about the quality of food and education into public policy at local, state, and federal levels.

Despite the proliferation of these programs and the significant energy and resources that have gone into their implementation, there have been few systematic assessments of farm-to-school initiatives. There is a need for a frank assessment of the challenges faced by these initiatives. Engaging these issues

is especially important given the prospect of growing legislative and material support for farm-to-school programs at various levels of government. If farm-to-school is to become an effective strategy for developing a sustainable food system, its practitioners should have access to the insights and perspectives that allow them to design the most effective programs possible. In this report, we use the experience of a farm-to-school project in Madison, Wisconsin, as a lens through which to identify structural challenges faced by all farm-to-school initiatives and examine key tactical issues that are likely to be confronted during their implementation.

Farm-to-school programs: Win-win for children and farmers?

Since farm-to-school initiatives typically involve work in public school systems and can reach children of all economic and ethnic groups, they bring an important equity dimension to an alternative food and agriculture movement that has been criticized as insufficiently engaged with issues of social justice.

Farm-to-school programs derive much of their appeal from the marriage of two apparently unconnected core concerns: the decline of independent family farms and the deteriorating nutritional status of the nation's children. Farm-to-school projects, which all involve sales of fresh, local food to school food services, are thought to provide an elegant, "win, win"[3] response to both of these problems. In their aptly titled report, *Healthy Farms, Healthy Kids*, Azuma and Fisher[4] describe the multifunctional potential of farm-to-school programs:

> For *students*, they can provide increased access to fresh produce, a hands-on, experiential learning opportunity, a link between the cafeteria and the school garden and nutrition education, and a foundation for building life-long dietary choices. For struggling, independent *family farmers* they can be a new market and an additional source of income, a meaningful way to be part of the local community, and an outlet to educate future consumers and potential farmers about agriculture.

Further, since farm-to-school initiatives typically involve work in public school systems and can reach children of all economic and ethnic groups, they bring an important equity dimension to an alternative food and agriculture movement that has been criticized as insufficiently engaged with issues of social justice.[5, 6]

Farm-to-school projects first emerged in the late 1990s at opposite ends of the country. In 1998, a group of African-American small farmers who had formed the New North Florida Cooperative began delivering turnip and collard greens to Gadsden County District schools.[7] In 1999, parents at a low-income school in Santa Monica, California, worked to offer a salad bar featuring fresh produce purchased from local farmers' markets as an option alongside the standard school lunch.[8] The initial successes enjoyed by these inaugural programs provided both a stimulus and a model for school reformers and food system activists across the nation. Growing interest in farm-to-school gained additional momentum in meetings and seminars organized by the USDA and a variety

of advocacy organizations.[9] The regional workshops and national "Farm-to-Cafeteria" conferences hosted by the Community Food Security Coalition were especially instrumental in providing a forum for farm-to-school outreach and the exchange of information and experience among practitioners.

The proliferation of farm-to-school programs over the last decade has been remarkable. Some 400 farm-to-school projects of various kinds can be found in 22 states. Significant concentrations of such efforts are located in California, the Northeast, and the Upper Midwest, but initiatives also appear in places as diverse as Oklahoma, Washington, New Mexico, Kentucky, Florida, and North Carolina.[13] Though a comprehensive accounting is not available, most farm-to-school projects appear to be associated with urban school districts and public school systems.

To a considerable degree, the growth in farm-to-school projects reflects a general rise in alimentary consciousness that has resulted in a 20 percent per year increase in the market for organic foods.[10, 11, 12] Parental concern for children's well-being, the widespread perception of the low quality of school lunches, and a sense that eating well is important are all reflected in enthusiastic support for farm-to-school programs.

The proliferation of farm-to-school programs over the last decade has been remarkable. Some 400 farm-to-school projects of various kinds can be found in 22 states.

The core activity of all farm-to-school programs involves sourcing fresh food for school meals and snacks, usually fruits and vegetables, from local and regional farms. An emphasis is frequently, but not always, placed on acquiring organic and sustainable produce. Within this general framework, projects are very diverse. Some purchase product from individual farmers, some from producer cooperatives, some from farmers' markets, some through conventional wholesalers, and some through participation in a Department of Defense procurement program. Projects may focus on one or a few schools, or involve multiple school districts. Schools may purchase a single crop such as apples or watermelons, or a much broader range of items. Occasionally, dairy products and meats are included.[14] The food may be incorporated into existing lunch menus, presented on a salad bar, or provided to students as part of a snack program. Procurement and presentation of fresh food on the school lunch menu depend heavily on the types of crops produced in the region and seasonal availability. Although a salad bar model has emerged in California because of its year-round growing season and farm structure, no single template for farm-to-school programs has become established nationwide.

In addition to food procurement, most farm-to-school programs also include a portfolio of educational activities. Frequently, these include in-class vegetable tastings, field trips to farms or farmers' markets, farmer visits to classrooms, school gardening, and the incorporation of food and farm issues into existing curricula.[2, 15] These educational activities enhance students' receptivity to the often unfamiliar fruits and vegetables served in the cafeteria. They also help

students understand, experientially as well as intellectually, the central role of food production and consumption in their own lives and in the social and biological metabolism of contemporary society.[16] What many farm-to-school advocates intend is not the simple replacement of distantly sourced, conventional vegetables with their locally sourced, sustainable counterparts, but a transformation of the educational process itself. As celebrity chef Alice Waters puts it, "let's make lunch a class."[17]

Making lunch a class clearly requires significant institutional reform. Farm-to-school programs often cooperate with community groups to create or change food, wellness and education policies at the school district, municipal, state, and federal levels. The Community Food Security Coalition has created a National Farm to School Network. This coalition of over 300 organizations is working to include provisions in the 2007 Farm Bill that would extend farm-to-school resources nationwide.[18]

What many farm-to-school advocates intend is not the simple replacement of distantly sourced, conventional vegetables with their locally sourced, sustainable counterparts, but a transformation of the educational process itself. As celebrity chef Alice Waters puts it, "let's make lunch a class."

Over the past few years, farm-to-school programs have gained broad visibility and appeal among constituencies beyond the concerned parents and food activists who are their core supporters. *The New York Times* regularly covers farm-to-school programs[19, 20] and has given Alice Waters and her "edible schoolyard" space on their op-ed page.[17] In a piece titled "How to Fix School Lunch," *Newsweek* features "Naked Chef" Jamie Oliver and his transformation of the food in London's school cafeterias.[21] Positive articles on these programs in such publications as *Food Service Director*,[22] *Today's Dietician*,[23] and *American School Board Journal* [24] reflect an emerging recognition by school and food service administrators that developing a farm-to-school component in their work is a realistic option.

At the state level, the cities of Berkeley and Seattle have created municipal food policies that support farm-to-school activities.[25, 26] In 2005, California passed the nation's most stringent school nutrition guidelines and allocated $18.2 million for purchases of fresh fruits and vegetables for school meals. In June, 2006, Oklahoma's state legislature passed legislation establishing a statewide farm-to-school initiative.[27, 28]

At the federal level, the USDA has provided technical, financial and administrative support to farm-to-school projects.[9, 29] Iowa Senator Tom Harkin succeeded at building a Fresh Fruit and Vegetable Program into the 2002 Farm Bill. This program provided free produce to schools in six states and two Indian reservations. Harkin is working with his colleagues to extend this program to additional states in the 2007 Farm Bill.[18]

Yet for all the attention, enthusiasm and resources being directed their way, there have been few systematic, analytic assessments of the performance of farm-to-school projects. A range of mostly unreflective essays in popular outlets and local

newspapers have touted the benefits of existing programs.[20, 21, 30] A variety of publications provide guidance on how to plan and implement a farm-to-school project.[2, 4, 9, 31] While these publications typically review case studies of existing farm-to-school initiatives, their principal intent is to illustrate opportunities and encourage development of such programs rather than to objectively assess their operations. Reports produced by the organizations undertaking farm-to school projects are typically anecdotal, unsystematic, difficult to locate and access, and—because they are reports to funding agencies—frequently emphasize achievements rather than difficulties.[32, 33, 34]

A handful of academic studies of farm-to-school programs have appeared. Some interpretative overviews—contrastingly sanguine and dismissive—appear to reflect the authors' own theoretical and practical commitments as much as the programs themselves.[35, 36] A few empirical, but narrowly focused, studies in California schools have assessed farm-to-school project outcomes. At one elementary school, incorporation of a vegetable garden into nutrition lessons increased students' willingness to taste vegetables.[37] In three elementary schools in Davis, California, analysis of students' lunch plates and deployment of a series of evaluation instruments showed that the "Crunch Lunch" farm-to-school program increased selection of fruit and vegetable servings and increased participation in an optional salad bar offering.[38, 39]

In most places farm-to-school has not resulted in the development of a robust market for local, sustainable farmers.

While a great deal of instructive data on farm-to-school programs is available in scores of reports, case studies, and articles, few of these systematically address program performance. These studies provide first impressions of how well farm-to-school programs are serving their intended clientele of children and farmers. It does seem clear that, as Senator Harkin suspected, kids will eat a variety of fresh fruits and vegetables when they have learned about them, tasted them, and become accustomed to them. Farm-to-school appears to be most effective in the classroom. Unfortunately, most of these programs have had difficulty establishing a significant presence in the lunchroom itself. Although there are important exceptions,[9, 40] few projects have been able to move beyond intermittent or piecemeal offerings of a fairly narrow range of foods.[2, 14, 28, 41]

As a consequence, in most places farm-to-school has not resulted in the development of a robust market for local, sustainable farmers. No one has yet assessed how much produce is purchased through farm-to-school programs, or from whom it is obtained. When projects report this information, sales are mostly modest, on the order of $1,000-20,000 annually per project.[39, 41, 42] Overall, farm-to-school programs seem to move relatively little product and are rarely institutionalized in school food service operations.

Despite the rising popularity of farm-to-school projects, a variety of obstacles and constraints appear to have prevented these projects from realizing their full potential. Given the real prospect that increased human and financial resources

will be applied to farm-to-school programs in the near future, it is important that these obstacles and constraints be recognized, understood, and engaged. The Wisconsin Homegrown Lunch initiative provides one example that can help initiate this important discussion.

Wisconsin Homegrown Lunch: Linking the land and the lunchroom?

The Madison Metropolitan School District includes 45 schools, and prepares over 15,000 meals every day at a central facility. Many schools in the district have never had their own kitchens, as past generations of students ate at home.

Wisconsin Homegrown Lunch (WHL) is a farm-to-school project in the Madison Metropolitan School District (MMSD).[34, 43] Initiated in September 2002, it is a joint effort of the local, non-profit community organization REAP (Research, Education, Action, and Policy on Food Group) and the Center for Integrated Agricultural Systems (CIAS) at the University of Wisconsin-Madison (UW). The overarching goals of this project are to increase the amount of locally grown foods served in MMSD cafeterias while also providing meaningful educational opportunities for students. A major factor in the decision to undertake this farm-to-school project was the success of the College Food Project, which established a market for local, sustainable farmers in the dining halls of the UW.[44] WHL has been supported by two grants from the USDA's Sustainable Agriculture Research and Education (SARE) program.

The MMSD includes 45 schools, and prepares 15,000 meals every day at a central facility. Many schools in the district have never had their own kitchens, as past generations of students ate at home. The district now has a highly routinized food service that faces substantial budget constraints. WHL could have sought partnerships with smaller school districts in other municipalities or private schools with more financial resources and flexibility. We nevertheless decided to approach the MMSD for two main reasons. First, as citizen advocates and researchers in Madison, we felt that we could most effectively cultivate relationships and maximize our direct involvement if we focused our efforts where we live and work. Second, equity considerations influenced our commitment to public schools. Public school cafeterias can provide quality, sustainably produced food to all segments of the population. We chose elementary schools in the hope that reaching young children might have a lasting impact on food choices and health.

Farm-to-school projects are exceedingly complex socially, as they involve not only the target populations of school children, farmers, and school food service staff, but also a variety of people and administrative bodies who have an interest in or might be affected by project activities. These include school board members, parent-teacher organizations, parents, teachers, principals, and school kitchen and custodial staff. The issue of food and children in public schools has the potential to be divisive along a range of fault lines.

In order to help the WHL staff make the best decisions possible in this complicated environment, an Advisory Committee was created. This committee included a dozen individuals representing the farm, food system advocacy, and education communities. Throughout the project, WHL staff pursued a non-confrontational, cooperative, highly consultative approach and tried to proceed at a pace no faster than any party was willing or able to move.

We initiated project activities by directly experiencing how lunches were prepared and consumed, assessing the receptivity of school staff to our program, and exploring what children knew about local food. We instituted a tomato and apple tasting program that brought farmers, volunteers, and WHL staff into 22 elementary schools and reached over 3,300 students. Three of those schools were selected as WHL pilot schools based on staff interest and student need.

The WHL educational component has been unmistakably successful. We have learned that a farm-to-school program can facilitate the acceptance and consumption of fresh vegetables by elementary school children.

An extensive portfolio of educational activities was implemented in these pilot schools. Each school was linked to its own farmer, who was drawn from the many Community Supported Agriculture (CSA) farms in the Madison area. These farmers provided classroom education that brought farm-fresh vegetables to children's minds and mouths. Their farms also provided sites for field trips and the critical opportunity for students to understand how the fresh produce they tasted in the classroom fit into the big picture of food production and the environment. The farmers, WHL staff, and volunteers assisted teachers with a variety of curricular activities including commodity chain exercises, worm bins, creation of a school garden, and transplanting cherry tomato seedlings.

The WHL educational component has been unmistakably successful. We have learned that a farm-to-school program can facilitate the acceptance and consumption of fresh vegetables by elementary school children. We have shown teachers and parents, as well as the students themselves, that children can learn to enjoy daikon radishes, Swiss chard, raw sweet potato sticks, and striped tomatoes in addition to the ubiquitous carrot. Teachers and principals have welcomed our curricular programming. Wisconsin's Department of Public Instruction is planning to distribute WHL educational modules statewide. The project has established classroom practices and school activities that will continue in the pilot schools when direct WHL support has ceased. Over a dozen additional MMSD elementary and middle schools wish to participate in WHL programming.

But if WHL has effectively linked the land with the classroom, it has been far less successful at fulfilling its own slogan of "linking the land and the lunchroom." As WHL staff implemented sourcing of local, fresh vegetables for school lunches, they were soon confronted by some serious difficulties.

First, and most importantly, the technical scale at which the MMSD food service operates is profoundly constraining. Producing meals for 45 schools at a single, central facility results in a rigid system that is difficult to alter.

Second, almost no cooking is actually done by the MMSD food service. With the exceptions of some baking and soup preparation, meals are largely compiled from ready to eat, pre-packaged components at the central kitchen facility. The task of food service labor is to compile efficiently, rather than cook.

Third, only three types of fresh vegetables are served in MMSD elementary schools: broccoli florets, baby carrots, and shredded lettuce. This narrow range of fresh produce is used in limited quantities and the food service typically spends little more than $1.25 per year per student—a total of $28,000 annually—on fresh vegetables.

WHL staff faced the task of developing recipes and procedures for an expanded range of menu items with which the food service had no experience, and to which its infrastructure was poorly matched.

Fourth, we discovered that the food service will only allocate minimal labor time to shredding, slicing, dicing, and peeling fresh produce. Labor is the single largest expense for the food service, and even minimal preparation of fresh vegetables by hand is regarded as prohibitively costly. The food service firmly requires that fresh vegetables come in a ready-to-use form.

Fifth, a combination of state curricular mandates and teachers' union work rules have resulted in a school lunch period that is technically twenty-five minutes long, and often less than that. The brevity of the lunch period precludes a salad and soup bar approach to serving local produce. It reduces the amount of time that can be used to educate children about food and forces children to eat quickly, particularly when recess follows lunch, reinforcing fast food attitudes and behaviors.

Having expected that pricing, brokering, and seasonality would be the principal barriers to local food sourcing, WHL staff found instead that the MMSD food service operates in a technical and culinary environment where the rich diversity of locally available fresh produce is almost entirely alien. WHL staff faced the task of developing recipes and procedures for an expanded range of menu items with which the food service had no experience, and to which its infrastructure was poorly matched. Working with the food service personnel, WHL staff members developed a variety of locally sourced menu items including rhubarb muffins, sweet potato muffins, salad mix, yogurt/cream cheese/dill sauce, vegetarian chili, a vegetarian tortilla wrap, cranberry cookies, squash bisque, and baked potatoes. For our pilot schools, the food service agreed to try some special menu items and serve several "Homegrown" meals. Because the food service found it was more difficult to innovate on a limited scale, a tortilla wrap meal was tried district-wide.

We found that almost every mode of incorporating locally sourced food into school meals required some, and often a substantial amount, of deviation from the food service's established parameters, practices, labor allocations, routines, and equipment usage. Rhubarb might be abundant, but there was no recipe for using it. Potatoes were available locally, but the district lacked the time and

facilities for on-site preparation. Kids might like raw sweet potato sticks after tasting them in the classroom, but no labor was available to prepare them. Although we were able to more than double the value of fresh produce going into the meals of our pilot schools, spending amounted to only a little more than $2,500 per year, primarily due to the low levels of initial usage. WHL was frustrated with the structural realities, and what they perceived as inadequate efforts, of the school food service. For their part, food service staff found that the changes in practices and patterns they were being asked to make were, in aggregate, more onerous than was acceptable and they became increasingly frustrated with WHL.

Mutual courtesy, and joint satisfaction with the success of our educational programming, deterred us from engaging these frustrations directly. However, the Child Nutrition and WIC Reauthorization Act of 2004 required that all school districts receiving USDA support for school lunches formulate a wellness policy[45] by the beginning of the 2006-07 school year. The MMSD created a committee to develop a comprehensive food policy as part of the larger wellness policy. Though our input was not directly solicited, we offered our assistance and provided the committee with extensive resources on how such policies were being created nationally, as well as our own thoughts on what the policy should contain. When the draft food policy was released, we found that it usefully treated a range of school food issues such as the availability of candy and "junk food" snacks in classrooms and access to vending machines. Its reference to the school lunch itself, however, was limited to the minimal commitment that "the meals that are served by MMSD Food Services must comply with or exceed all USDA standards."[46] The food service had countenanced no change at all in its own existing practices regarding school meals.

During the course of the project, we grew to understand that the structural constraints circumscribing WHL—and probably other farm-to-school programs—require policy solutions if they are to be overcome.

During the course of the project, we grew to understand that the structural constraints circumscribing WHL—and probably other farm-to-school programs—require policy solutions if they are to be overcome. We had regarded the development of a comprehensive food and wellness policy as a critical opportunity to make lasting, significant changes in the regulatory and administrative framework of the MMSD food service. WHL staff therefore made a strategic decision to pursue passage of a policy that covered school meals regardless of the effect on our relationship with the MMSD food service. We publicized our point of view widely, organized citizens for public comment, and promoted our positions to the school board, which was the body charged with finalizing the policy.[47] Though we subsequently agreed to disagree, cooperation between WHL and the MMSD food service staff has since been severely curtailed and is currently limited to the food service receiving fresh vegetables, prepped off-site and delivered to four Madison schools for WHL's snack program (see "Beyond Lunch," p. 16).

Despite this compromised relationship with the MMSD food service and the inability to foster a consistent market for local produce sales to the school system, WHL continues to move forward with the following efforts:

- Creation of a fresh fruit and vegetable classroom snack program in MMSD schools as a simpler, more practical approach than transforming meals.
- Development of curricular modules based on its educational activities.
- Working with a grocery cooperative to process local, fresh vegetables.
- Development of a school fundraising program offering gift baskets of locally grown food.
- Shifting its emphasis to a regional support function for the many other schools and districts in the Midwest that are interested in farm-to-school programming.

Perhaps most significantly, analysis of the opportunities and constraints experienced in the WHL project may prove useful to current and future farm-to-school initiatives across the nation.

Farm-to-school programs are embedded in an overarching fast food culture that actively opposes their purposes.

Structural barriers

A number of formal publications on farm-to-school have explicitly addressed the barriers to success that these projects are likely to encounter.[2, 9, 14, 41, 43] Though a range of such impediments have been identified, they cluster around three central concerns:

- **Cost**: schools are under budgetary constraints, and prices of sustainable and organic produce are high;
- **Procurement**: institutional buyers prefer to deal with few vendors to maximize the efficiency of ordering and delivery;
- **Supply**: farmers need to provide sufficient volumes of product consistently over the seasons in ready-to-use form.

While we certainly encountered these issues through WHL, we also confronted a variety of obstacles that have not so far been raised in the farm-to-school literature. We found that some of these obstacles were structural; that is, they were broader social issues beyond the control of a particular school, food service, or farm. The constraints on WHL imposed by such structural issues must be addressed through changes in the overarching frameworks of policy or governance. Other obstacles had more immediate solutions, and could be dealt with by WHL staff through tactical choices. While the lessons we have learned are to some degree site-specific to Madison, both the structural and tactical obstacles faced by WHL have been and will be encountered by farm-to-school projects across the country.

Overarching food culture

Farm-to-school programs are embedded in an overarching fast food culture that actively opposes their purposes. The average American is overweight and nearly 20 percent of all energy intake in the U.S. diet is derived from soft drinks, burgers, pizza, chips and pastries.[48] The food industry spends some $30 billion per year advertising its products and promoting the development of what has been called a "toxic food environment."[49] Such statistics indicate wide-ranging preferences, practices and attitudes that thwart the prospects for WHL, and other farm-to-school programs, achieving their goals.

We have often heard MMSD food service, administrative staff, and teachers say that "kids just won't eat vegetables." We disagree with this. It's not that kids *won't* eat vegetables, it's that they *don't* eat vegetables because adults don't generally model their consumption, they haven't been exposed to them, and school meals don't include them. WHL educational programming and in-class tastings demonstrated that children in our pilot schools can learn to enjoy a wide variety of fresh vegetables when they are not competing with French Toast Stix in the cafeteria or candy in the classroom.

WHL educational programming and in-class tastings demonstrated that children in our pilot schools can learn to enjoy a wide variety of fresh vegetables when they are not competing with French Toast Stix in the cafeteria or candy in the classroom.

However, without significant changes in American food culture generally and school food policies particularly, farm-to-school initiatives such as WHL may do little more than alter the preferences of a few students in a few schools. The attention given to the film *Supersize Me,* the popularity of such books as *Fast Food Nation,*[10] *Food Politics,*[11] and *The Omnivore's Dilemma,*[12] and the growth of the market for organics are encouraging evidence that societal attitudes toward food are shifting. The challenge is to ensure that changing attitudes are translated into concrete public policies. Proponents of farm-to-school programs should be as attentive to public policy as they are to their schools' lunch menus. Enhanced regulation of food industry lobbying, labeling, and marketing practices—especially regarding marketing to children—could do much to facilitate the emergence of a more healthful food culture in this country.[50, 51]

At the local level, school districts can develop policies that eliminate junk food vending, limit the availability of empty-calorie food and beverages that compete with school breakfast and lunch programs, discourage the use of sweets as incentives for classroom performance, encourage the provision of nutrient-dense foods in school meals, and use the cafeteria to vigorously promote healthy eating habits. The federal requirement for the development of school wellness policies provides a framework for accomplishing this. Although disappointed by the damaging effect of our unabashed advocacy on our relationship with the MMSD food service, we regard our influence on the overall character of the MMSD Wellness Policy as one of the signal achievements of WHL.

Quasi-privatization of food services

Across the United States, the great majority of public school food services are stand-alone financial units that are partially uncoupled from the revenue-based allocation of public funds for education. Except for staff salaries, which are underwritten by the city, the MMSD food service must recover all of its operating costs. This income comes from meal sales and reimbursements received from the USDA in return for maintaining specific nutritional standards and providing reduced-price meals to students from low income families. Since both revenues and USDA subsidies are a function of the number of meals sold, the food service treats students as customers and has a powerful incentive to serve what they will buy. According to the MMSD food service director, "The single biggest challenge in school food service is to serve a nutritious lunch that students will actually eat." School food services are simultaneously expected to meet the nutrition standards of the USDA, provide affordable meals to low income students, and also compete with children's tastes and preferences shaped by the fast-food culture. These conditions produce a race to the bottom in which food quality degenerates as food services, in an effort to retain student customers, mimic commercial fast-food competitors. Making matters worse, they cut costs by using USDA commodity foods and pre-packaged meal items that are assembled rather than cooked.

According to the MMSD food service director, "The single biggest challenge in school food service is to serve a nutritious lunch that students will actually eat."

As long as this quasi-privatized structure persists, it is hard to see how the MMSD food service, or similar public school food services, can successfully implement a farm-to-school program. Piecemeal introduction of healthy menu options, especially without a robust educational support program and restrictions on the availability of competing foods, risks erosion of sales and fiscal crisis for the food service. The answer to this conundrum again lies in public policy change, requiring school districts to treat food as an integral part of education and consider assumption of full financial responsibility for the provision of quality meals.

Scale/industrialization

In the 2005-06 school year, an elementary school hot lunch in the MMSD cost $1.90, with the food ingredients accounting for $.68 of that total. These low cost and price levels are possible because of the large scale, mechanization and routinization that characterize the MMSD food service operation. Like many medium-sized and large school districts across the nation, the MMSD utilizes a single centralized production and distribution facility from which approximately 15,000 meals a day (3.2 million per year) are distributed by truck to the 45 schools in the district.

The absence of in-school kitchen facilities and the journey by truck requires meals to be pre-packed in disposable aluminum or plastic containers, usually one hot pack and one cold pack per meal. These packages are compiled and sealed

on an assembly line each morning, trucked to schools, reheated as needed, and handed out for students to unwrap, eat, and dispose of during their twenty-five minute lunch period. All menu items must conform to a reheating system, and all transportation and service infrastructure such as carts, truck interiors, trays, refrigerators, and reheating ovens must comply with a strict set of physical parameters. Coupled with the financial restrictions within which it must operate, the scale and technical organization of the MMSD food service make even small changes disproportionately difficult.

A lesson from WHL is that it may be advantageous to initiate farm-to-school programs in small rather than large school districts, or in districts where production facilities and protocols are not so rigid. In Wisconsin, only two other school districts—Milwaukee and Green Bay—operate at Madison's scale, and both share its centralized style of food service. Many smaller school districts in our region have retained in-school kitchens, continue to work with significant quantities of whole vegetables, and have considerable flexibility in terms of labor, food preparation, and presentation. While most farm-to-school projects are located in urban centers, rural school districts may have an interest in purchasing from farmers who are part of the community. A systematic review of the effects of scale and technical characteristics on their progress would bring some valuable perspective to the question of what kinds of school districts have the most success with farm-to-school projects.

The three barriers to project success most commonly cited in the farm-to-school literature are price, procurement, and supply. Of these, procurement proved least problematic to WHL. Pricing was more problematic. Supply was a deeper problem than either pricing or procurement arrangements.

Price, procurement, supply

The three barriers to project success most commonly cited in the farm-to-school literature are price, procurement, and supply. Of these, procurement proved least problematic to WHL. Like many school districts, the MMSD food service is required by contract to purchase approximately 80% of their food products through a national food distributor. However, the additional 20% can be purchased locally, and it was not administratively difficult to add a local farmer cooperative as a vendor. As long as small numbers of individual farmers become vendors, or farmers organize cooperatives or other collective arrangements, transaction costs should present no serious barrier to local purchasing.

Pricing was more problematic and required creative solutions. Our partner cooperative grows and sells high quality, organic produce for high-end restaurants, and the farmers receive premium prices. Furthermore, this cooperative offers a wider variety of produce than the food service is accustomed to working with. The fresh vegetables purchased by the MMSD—baby carrots, chopped lettuce, and broccoli florets—are so ubiquitous in institutional food services that they are essentially commodities. We found, as others have,[41] that the prices charged by the national distributor for other produce items varied widely and that local produce, even organic, could be competitively priced. The spinach, cabbage and carrots used for a WHL district-

wide event were affordable, but the labor required to prepare them was not. Shredded carrots, diced potatoes, and mashed sweet potatoes were affordably integrated into recipes for muffins and soup. Food services using a variety of fresh fruits and vegetables can likely purchase local produce at acceptable prices.

For WHL, supply was a deeper problem than either pricing or procurement arrangements. Through initiatives with the University of Wisconsin and local hospitals we learned that, while it is possible to generate institutional demand for significant quantities of fresh, local produce, it is difficult to identify commensurate sources of supply. South central Wisconsin has a wealth of vegetable growers using sustainable agricultural practices. But they specialize in capturing organic, niche, and direct markets. Critically, they are almost always geographically dispersed with limited production capacities. They are rarely collectively organized and often reluctant to expand their operations.[52]

One feature of the MMSD food service that struck us forcefully was the degree to which it no longer cooks meals, but instead assembles pre-packed components.

Ironically, Wisconsin is a leading producer of processing vegetables on a small number of large, conventional farms. In a classic conundrum of the "disappearing middle," the small growers are reluctant to get bigger by expanding production and the large growers are reluctant to plant small amounts of fresh market varieties. The small growers are often disinclined to embrace the capital outlays, increased labor demands, and lower prices associated with expansion. The large growers tend to regard planting a few acres of an unfamiliar variety as a trivial addition to their operations. A further constraint is the "chicken-egg" problem: farmers want a market before they augment production, while food services want to know there is an adequate supply before they commit to buy. Given the tight profit margins both businesses operate under, it's no surprise that no one wants to go first. With the exception of California, we suspect that farm-to-school programs in most regions of the country face these circumstances.

Processing

One feature of the MMSD food service that struck us forcefully was the degree to which it no longer cooks meals, but instead assembles pre-packed components. As a cost reduction measure, the food service has reduced labor wherever it can, and in the MMSD's centralized kitchen there is little latitude for hand preparation of fresh, raw fruits and vegetables. This is true for many institutional food services that receive the vast majority of their fresh produce already washed, chopped, sliced, diced, and bagged. In most school districts across the country, locally purchased produce must arrive ready-to-use. Most farm-to-school programs will need to overcome this barrier.

A local grocery cooperative which has a commercial kitchen is supplying WHL with some prepared vegetables. We explored the possibility of contracting with one of the few fresh processors left in Wisconsin, but this relatively small facility was too large to prepare small amounts of local produce at a price that farmers

and the food service found acceptable. The cost of setting up a small, efficient processing plant in our region would be on the order of $1.5 million.[53] This would be a substantial but not inconceivable undertaking for a group of farmers. Indeed, with assistance from the USDA, the New North Florida Cooperative built a plant to process their products.[7] Simple, stand-alone processing equipment is available for far less, but there is very little information available on how, or even if, it is being used for farm-to-school projects.

There is a need to determine technical, labor, and cost benchmarks that illuminate the prospects for a small-scale processing enterprise. It is our experience that few farmers are interested in processing. If processing facilities are to be constructed to serve farm-to-school programs, public or private support is needed to underwrite their creation.

Tactical choices

While structural features such as the overarching food culture, highly industrial school food service, price, procurement, supply, and processing exerted an immediate and powerful influence over WHL, there was little that could be done to significantly alter their effects in the short term. On the other hand, project personnel were faced with a wide range of matters that they could influence and which meaningfully shaped the project. Below, we report our experience with some key tactical choices that other farm-to-school projects are likely to face.

Leadership

Farm-to-school initiatives involve a complex array of people. Projects must recognize the different interests of students, farmers, food service staff, parents, teachers, and custodial staff, and coordinate their participation. Leadership is welcome from all participants. However, it is our experience that effective guidance from principals and food service directors is critical. Schools and food services are hierarchical institutions, and principals and food service directors are both gatekeepers and decision makers who can facilitate or impede a farm-to-school project. It is difficult for enthusiastic teachers or food service staff to overcome resistance on the part of their leadership. Conversely, principals and food service directors who are active supporters of an initiative can create a climate in which participation in the project is encouraged and rewarded.

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Food service directors are especially pivotal. If the food service director does not want the project, it will fail. If he or she is indifferent to the project, it will most likely fail. If the food service director is enthusiastic about the project, there is a chance of progress. In some cases a director may become a "convert" as a result of program implementation.[4, 41] However, a food service director can also easily become disenchanted with a farm-to-school project as the difficulties imposed

by the structural barriers discussed above are manifested. As WHL plans its expansion to new schools, we seek to work exclusively with districts in which the food service director understands the motivation of farm-to-school advocates and actively seeks to make serious changes in lunchroom operations.

Creating change

A consistent theme in the farm-to-school literature is the need to develop a collegial and effective working relationship with school food service staff.[4] Like most of its counterparts, the MMSD food service had previous experience with a variety of external initiatives intended to alter the way Madison's school children are fed. These initiatives did not take into account the conditions facing the school system, had little follow up, and were perceived as disruptive rather than constructive. A key strategy for WHL was to foster the emergence of professional, congenial, trusting, and responsive relationships with food service staff and proceed slowly, transparently, and inclusively. We consciously avoided encouraging parental and popular criticism of the existing lunch program in favor of an approach that emphasized constructive innovation. WHL staff worked successfully to generate positive media coverage of the program and took care to publicly acknowledge the difficulties faced by the food service as it implemented project activities.

In retrospect, it would have been useful to have had parents, parent-teacher organizations, and school board members advocating for a set of goals and expectations complementary to those of WHL.

As a result of this approach, the MMSD was tolerant of, though not enthusiastic about, working with us. However, our tactic of avoiding aggressive advocacy may well have contributed to a climate in which the food service felt little pressure to alter its performance. In retrospect, it would have been useful to have had parents, parent-teacher organizations, and school board members advocating for a set of goals and expectations complementary to those of WHL. Such reinforcement might have induced the food service to pursue proposed changes more vigorously. In their work with food services, farm-to-school programs need to carefully consider how to maintain an effective balance between cooperation and advocacy, provide incentives, and apply pressure.

Beyond lunch

Over the course of the project, WHL has considered several different approaches to incorporating local, fresh foods into MMSD lunches. A salad and soup bar was precluded by the short amount of time allocated to the elementary school lunch period. Initial efforts to develop "homegrown" lunches completely prepared from locally available, fresh produce foundered on problems of supply and the operational limitations of the MMSD food service. A substitution approach based on replacement of specific ingredients and menu items has shown promise, but is constrained by the narrow range of fresh fruits and vegetables now used in MMSD menus.

Recently, we have implemented a fourth strategy that sidesteps the school lunch to focus on the provision of fresh fruit and vegetable snacks during the school day. WHL has successfully piloted a snack program in several elementary schools and one middle school. This "beyond lunch" emphasis on snacks has a variety of advantages. First, kids are often hungry at times other than the lunch period, and that hunger provides a powerful incentive to try new or unaccustomed vegetables such as daikon radishes, kohlrabi, and cauliflower florets. Second, a snack program can provide the regular, extended exposure that behavioral research has shown is critical for children to develop a liking for a new food. Third, the relatively small quantities of food required for a snack program are easier to source, process, and deliver than the food required for a full-scale lunch program. The snack program provides an opportunity to implement a farm-to-school program at a less risky scale. Fourth, the simplicity of a snack program avoids many of the technical obstacles associated with industrialized food services. Fifth, funding a snack program is much easier for a school district or a parent-teacher organization than restructuring the financing of an entire meal program. Sixth, a wide variety of raw fruits and vegetables can be served in a snack program and are available across the seasons. Prospective farm-to-school programs should consider beginning their initiatives with a snack program. To the extent that a snack program is successful, it prepares children, farmers, and food service personnel for scaling up to a full-blown lunch program.

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Lunchroom or classroom?

Although many farm-to-school programs incorporate a classroom component, they have emerged from the alternative agriculture movement as a strategy for developing new markets for local, sustainably grown food rather than as a mechanism for educational reform. Most of the literature on farm-to-school reflects this marketing emphasis and concentrates mostly on the demands of connecting farms with food services. Although WHL began with the sort of "farm-centric" orientation common to farm-to-school programs, it quickly became apparent that the educational component of this project was not merely a supplemental activity, but a fundamental necessity. Indeed, we now believe that successfully linking the land and the classroom is, in many cases, a prerequisite for successfully linking the land and the lunchroom.

While the health benefits of eating fruit and vegetables are widely documented, only 20 percent of children and adolescents eat the recommended five servings of those foods each day.[54] Many children are unfamiliar with and think they will not like the fresh fruit and vegetables that farm-to-school programs offer. Happily, eating preferences and behaviors are modifiable, and this is particularly true of children. However, acceptance of a new food item is an adaptive process that is greatly facilitated by multiple exposures (10 or more are often necessary) that include tasting and presentation in a positive and engaging context.[55] School food services will not be willing to serve fresh, local vegetables if students will

not eat them. School food services may be willing serve fresh, local vegetables if students will eat them. Engaging students with educational activities such as tasting sessions, farmers and chefs in the classroom, and field trips will increase their desire to consume diverse fresh fruits and vegetables in the cafeteria.

Our experience with curricular development in WHL has been overwhelmingly positive. Students enjoy the hands-on, experiential activities. Teachers appreciate the assistance and material support. A strong educational component is extremely useful as an outreach tool for communicating with the wider community and involving parents. Development and dissemination of educational modules and materials will be the cornerstone of WHL's programmatic emphasis in the future. Increasingly, farm-to-school programs and proponents are coming to understand that "school" includes both lunchroom and classroom.[16, 56] This is a trend that should be embraced and reinforced.

We know far too little about how farm-to-school projects are performing, who is participating in them, what they are accomplishing, what obstacles they are facing, and how they are responding to the challenges they encounter.

Conclusion

Over the past decade, farm-to-school programs have proliferated within the alternative food and agriculture movement. There is reason to expect that the number of these projects will continue to increase. Farm-to-school initiatives certainly have a great deal of promise. As institutions responsible for equitably providing both education and meals, schools are key places where healthy eating behaviors can be introduced, modeled, and reinforced. Modest investments in developing diverse, nutritious food preferences among students will have important health payoffs over the entire course of their lives. Farm-to-school projects create opportunities for farmers to sell their products to the $7.1 billion school lunch program.[57] And, since schools are public institutions that are subject to decisions made through the public policy process, there is an avenue for citizens to require that school meals be sourced from sustainable farmers.

However, the extent to which the apparent promise of farm-to-school is being fulfilled is not clear. We know far too little about how farm-to-school projects are performing, who is participating in them, what they are accomplishing, what obstacles they are facing, and how they are responding to the challenges they encounter. If these programs are to become established as an integral element of the movement to create a sustainable food system, a broad analysis of their operation will be needed to inform program design and public policy change.

In a variety of ways, the results of the WHL program have been satisfactory. We have successfully established an educational component that teaches children how food is grown, processed, and marketed. We have modeled sustainable, healthy eating. Teachers and administrative staff alike welcome WHL classroom activities. We have communicated the WHL program and its objectives to a variety of audiences in Madison and beyond. We have received extensive, positive

coverage of WHL strategies and activities in print, television, and radio outlets. We have established a climate of awareness in which our farm-to-school efforts are widely recognized and regarded as innovative and effective. Most importantly, we have confirmed Senator Tom Harkin's contention that it is possible to facilitate the acceptance and consumption of fresh vegetables by elementary school children, under the right circumstances.

Unfortunately, we found that the possibilities for connecting the land and the lunchroom are seriously constrained by a variety of structural features that we believe will be encountered by most farm-to-school projects nationwide. These constraints—the overarching food culture, the quasi-privatized character of most school food services, the degree of industrialization of many school food services, issues of price, procurement and supply, and the need for processing facilities—do not lend themselves to simple, near-term resolution. Indeed, the clearest lesson to be learned from our experience with WHL is that, if farm-to-school programs are to operate effectively, public policy must provide a congenial institutional and regulatory environment for them. Farm-to-school advocates will need to act politically—at local, state and federal levels—to achieve the educational and alimentary reforms they want to see in the schools.

Without the examples provided by early farm-to-school projects, Senator Harkin would not have worked to include a Fresh Fruit and Vegetable Program in the 2002 Farm Bill. The actions taken now constitute the resource base out of which deeper and broader transformations can emerge.

This is not to say that farm-to-school programs should not be attempted until structural transformations are accomplished. Ideally, project work and policy change will happen in tandem. Pilot initiatives are an opportunity to test strategies and innovations addressing institutional, logistical and policy barriers. Moreover, they often directly stimulate structural change. Without the examples provided by early farm-to-school projects, Senator Harkin would not have worked to include a Fresh Fruit and Vegetable Program in the 2002 Farm Bill. The actions taken now constitute the resource base out of which deeper and broader transformations can emerge.

In order to support and enhance the operation of current and prospective farm-to-school projects, we have described some of the key tactical choices made in the course of the WHL program. We have found that enthusiastic leadership from the food service director is critical to success, and a cooperative approach with food service staff needs to be complemented by judicious application of external pressures for change. There are promising opportunities for students to consume fresh food in places other than the cafeteria, and an educational component is as important a part of a farm-to-school program as the connections between farmers and the food service.

Farm-to-school initiatives hold promise for improving the health of both children and family-scale farms. We hope that our experiences and observations will contribute to a wider discussion of how farm-to-school programs are performing and what contributions they are making to the development of a sustainable food system.

Endnotes

1. Harkin, T. 2005. Remarks of Senator Tom Harkin (D-IA) at the Healthy Schools Summit, September 27, 2005, Washington, D.C. http://harkin.senate.gov/news.cfm?id=246470, accessed September 27, 2005.

2. Kalb, M., Markley, K. and Tedeschi, S. 2004. *Linking farms with schools: a guide to farm-to-school programs for schools, farmers and organizers.* Washington, DC: Community Food Security Coalition.

3. United States Department of Agriculture Food and Nutrition Service. 2000. *Small farms/school meals initiative: town hall meetings.* FNS-316 (March), Washington DC: USDA-FNS.

4. Azuma, A. M., and Fisher, A. 2001. *Healthy farms, healthy kids: evaluating the barriers and opportunities for farm-to-school programs.* Venice, CA: Community Food Security Coalition, p. 3.

5. Allen, P. 2004. *Together at The Table: Sustainability and Sustenance in the American Agrifood System.* University Park, PA: The Pennsylvania State University Press.

6. Allen, P. and Kovach, M. 2000. "The capitalist composition of organic: the potential of markets in fulfilling the promise of organic agriculture." *Agriculture and Human Values* 17:3 (September):221-232.

7. Holmes, G., Richardson, V., and Schofer, D. 2002. "Taking it to the next level: success of small Florida vegetable co-op leads to a network of similar cooperatives." *Rural Cooperatives* 69:5 (September-October). http://www.rurdev.usda.gov/rbs/pub/sep02/taking.html, accessed April 25, 2006.

8. Mascarenhas, M. and Gottlieb, R. 2000. *The farmers' market salad bar: assessing the first three years of the Santa Monica-Malibu Unified School District program.* Los Angeles, CA: Center for Food and Justice, Occidental College.

9. Tropp, D. and Olowolayemo, S. 2000. *How local farmers and school food service buyers are building alliances.* USDA Agricultural Marketing Service, December.

10. Schlosser, E. 2001. *Fast Food Nation.* New York, NY: Houghton-Mifflin.

11. Nestle, Marion. 2002. *Food Politics: How the Food Industry Influences Nutrition and Health.* Berkeley, CA: University of California Press.

12. Pollan, M. 2006. *The Omnivore's Dilemma: A Natural History of Four Meals.*

New York, NY: The Penguin Press.

13. Community Food Security Coalition. 2006. "State programs." http://www.farmtoschool.org/map.htm, accessed July 14, 2006.

14. Gregoire, M.B. and Strohbehn, C.S. 2002. "Benefits and obstacles to purchasing food from local growers and producers." *The Journal of Child Nutrition and Management* 25:2:62-65.

15. Feenstra, G. 2000. "School gardens produce food and lessons." *California Agriculture* 54:5:10-11.

16. Stone, M.K., 2002. "A food revolution in Berkeley." *Whole Earth* (Spring):3848.

17. Waters, A. 2006. "Eating for credit." *The New York Times* (March 24):A27.

18. Community food Security Coalition, 2006. *CFSC's Policy Priorities.* http://www.foodsecurity.org/policy.html, accessed May 22, 2006.

19. Severson, K. 2005. "Eating, writing and 'rithmetic." *The New York Times* (September 9):C22.

20. Apple, R.W. 2005. "Keep these kids from eating veggies? Try." *The New York Times* (July 6):D1-D2.

21. Tyre, P. and Staveley-O'Carroll, S. 2005. "How to fix school lunch." *Newsweek* (August 8):50-51.

22. Weisberg, K. 2005. "The farmer and your table." *Foodservice Director* (May 15):44-47.

23. Jackson, K. 2005. "The farm-to-school movement." *Today's Dietician* May:40-43.

24. Vail, K. 2005. "School food revolution." *American School Board Journal* 192. http://www.asbj.com/2005/01/0105coverstory.html, accessed October 4, 2005.

25. Food Matters Sonoma County. 2003. *City of Berkeley food and Nutrition Policy.* http://www.food-matters.org/pages/berkeley.htm, accessed July 29, 2006.

26. Seattle Public Schools News Release. 2004. "School board approves

comprehensive suite of nutrition policies." September 3, 2004. http://www.seattleschools.org/area/news/x40903nr.xml, accessed September 10, 2004.

27. Gledhill, L. 2005. "Governor signs bills to trim obesity in schools." *San Francisco Chronicle,* Sacramento Bureau, September 16. http://ww.sfgate.com/cgi-bin/article.cgi?file=c/a/2005/09/16, accessed September 19, 2005.

28. Dobberstein, J. 2006. "Program links farms, schools." *Tulsa World* (June 8): E1, E3.

29. Schofer, D., Holmes, G., Richardson, V. and Connerly, C. 2000. *Innovative marketing opportunities for small farmers: local schools as customers.* USDA, Agricultural Marketing Service, February.

30. Burros, Marian. 2005. "Fresh gets invited to the cool table." *The New York Times* (August 24):D1, D4.

31. Sanger, K. and Zenz, L. 2003. *Farm-to-cafeteria connections: marketing opportunities for small farms in Washington State.* Washington State Deaprtment of Agriculture PUB 200-102 (N/11/03).

32. Brillinger, R., Ohmart, J. and Feenstra. G.. 2003. *The crunch lunch manual: a case study of the Davis Joint Unified School District Farmers Market Salad Bar Pilot Program.* Davis, CA: University of California Sustainable Agriculture Research and Education Program.

33. Rimkus, Jones, P. and Ona, F. 2004. *San Francisco farm-to-school report: results from the 2003 feasibility study.* San Francisco: San Francisco Food Systems.

34. Kloppenburg, J. 2005. *Wisconsin Homegrown Lunch: piloting a Midwestern model for farm-to-school projects.* Final Report to the Sustainable Agriculture Research and Education Program.

35. Vallianatos, M., Gottlieb, R. and Haase, M.A. 2004. "Farm to school: strategies for urban health, combating sprawl, and establishing a community food systems approach." *Journal of Planning Education and Research* 23:414-423.

36. Allen, P. and Guthman, J. 2006. "From 'old school' to 'farm-to-school:' neo-liberalization from the ground up." *Agriculture and Human Values* 23:401-415.

37. Morris, J., Briggs, M. and Zidenberg-Cher, S. 2000. "School-based gardens can teach kids healthier eating habits." *California Agriculture* 54:5:40-46.

38. Graham, H., Feenstra, G., Evans, A. M., and Zidenberg-Cherr, S. 2004.

"Davis school program supports life-long healthy eating habits in children." *California Agriculture* 58:4:200-205.

39. Ohmart, J. and Feenstra G. 2004. "Plate tectonics: Do farm-to-school programs shift students diets?" *Sustainable Agriculture* 16:3:1-3.

40. Community Food Security Coalition. 2006. *Case Studies.* http://www.foodsecurity.org/farm_to_school.html, accessed July 6, 2006.

41. Berkenkamp, J. 2006. *Making the farm-school connection: opportunities and barriers to greater use of locally-grown produce in public schools.* Consultant's report prepared for the University of Minnesota, St. Paul.

42. Strohbehn, C, Huss, J., Pirog, R., Karp, R., Thorius, J. and Anders, C. 2000. *Local food connections—from farms to schools.* ISU Extension PM 1853A, Ames, IA: Iowa State University.

43. Stouder, H., Kloppenburg, J. and Tedeschi, S. 2003. *The potential of public schools in Madison, Wisconsin, as markets for local fresh fruits and vegetables: assessing the myths and realities of seasonality, price, transaction costs, and prep labor.* Minneapolis, MN: North Central Initiative on Small Farm Profitability.

44. Hendrickson, J. 2000. *The College Food Project year one report to SARE.* Center for Integrated Agricultural Systems, University of Wisconsin. http://www.sare.org/projects/san_db_viewer.asp?id=1583, accessed June 15, 2006.

45. United States Department of Agriculture. 2006. *Healthy schools: local wellness policy requirements.* http://www.fns.usda.gov/tn/Healthy/wellness_policyrequirements.html, accessed August 2, 2006.

46. Research, Education, Action, and Policy on Food Group. 2006. "Wisconsin Homegrown Lunch responses to the Madison Metropolitan School District Comprehensive Food Policy Questionnaire." http://www.reapfoodgroup.org/farmtoschool/mmsdfoodpolicy.shtml, accessed July 30, 2006.

47. Research, Education, Action , and Policy on Food Group. 2006. "Comments and resources." http://www.reapfoodgroup.org/farmtoschool/mmsdfoodpolicy.shtml, accessed July 30, 2006.

48. Block, G. 2004. "Foods contributing to energy intake in the US: data from NHANES III and NHANES 1999-2000." *Journal of Food Consumption and Analysis* 17:439-447.

49. Goode, E. 2003. "The gorge-yourself environment." *The New York Times*

(July 22): D1, D7.

50. Nestle, M. 2002. *Food Politics: How the Food Industry Influences Nutrition and Health.* Berkeley, CA: University of California Press.

51. Landis, M., Ahrens, D. and Remington, P. 2005. "Improving student nutrition through school vending machine policies." Issue Brief 6:1 (March), Wisconsin Public Health & Health Policy Institute.

52. Hendrickson, J. 2006. *Grower-to-grower: Fresh market vegetable farms at three scales of production.* Madison, WI: Center for Integrated Agricultural Systems.

53. Yellow Wood Associates, Inc. 2002. *Preliminary feasibility study for a public market for Madison, Wisconsin.* St. Albans, VT: Yellow Wood Associates, Inc.

54. Krebs-Smith, S.M., Cook, D.A., Subar, A.F., Cleveland, L. Friday, J. and Kahle, L.L. 1996. "Fruit and vegetable intakes of children and adolescents in the United States." *Archives of Pediatrics and Adolescent Medicine* 1996:150:81-86.

55. Birch, L. and Fisher, J. 1996. "The role of experience in the development of children's eating behavior." Pp. 113-141 in Capaldi E. (ed.), *Why We Eat What We Eat: The Psychology of Eating.* Washington, DC: American Psychological Association.

56. Rethinking Schools. 2006. "Feeding the Children." Special issue of *Rethinking Schools* 20:4 (Summer), 2006.

57. USDA. 2005. "National school lunch program: program fact sheet." http://www.fns.usda.gov/cnd/lunch/, accessed August 2, 2006.