

Farm to School: Evidence-based Pedagogical Recommendations for Teachers to Utilize Local Food Systems to Enhance Learning

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Abstract

Farm to school (F2S) programs are growing initiatives that are providing locally, healthy foods to students. Many school districts are utilizing these programs to enhance the nutritional value of the foods served to students as well as connecting students to food by developing lasting, quality eating habits. In this article, the authors highlight evidence-based pedagogical recommendations to utilize the farm to school programs to enhance learning. Using five Power Principles, the authors suggest activities to students to make connections across the curriculum as they explore F2S concepts. Literacy, mathematics, social studies, science, and the fine arts are integral parts of the activities suggested. In addition, the authors highlight the opportunities and challenges associated with implementing F2S programs. Finally, in this narrative, the authors encourage teachers to utilize these recommendations to promote healthy eating and learning.

Keywords: Motivation, Learning Principles, Strategies, Farm, Health, Local Foods

Introduction

Farm to school (F2S) programs are emerging innovative initiatives that are growing from the local food system movement. Providing locally grown foods to schools is the focus of these programs. Advocates indicate that schools play an influential role in improving the health and dietary habits of children (Izumi,

B., Alaimo, K., & Hamm, M, 2010). While childhood obesity remains a public health concern, schools that provide increased access to locally grown fruits and vegetables are demonstrating alternative food source options that benefit both the student and the local farmer. In the United States, the National School Lunch Program (NSLP), a meals program funded in part by the federal budget, provides meal service for over 100,000 public schools and residential child care centers. Since then, F2S programs have grown to serve over 21 million children across the country (US Dept. of Agriculture Food and Nutrition Service, 2014).

The benefits of F2S programs are extensive, and student education emerges as one of the paramount reasons for F2S implementation. Through the integration of learning approaches with F2S programs, educators are able to guide students to healthier lifestyles by providing them the opportunities to make informed decisions regarding healthy eating. Learning activities can include fun and informative nutrition curricula as well as cooking classes or food clubs. Many food clubs host guest speakers on a monthly basis to promote the benefits of F2S programs, including connecting chefs and farmers to the students. To engage families and the community, some F2S programs prepare meals beyond the students and invite parents, guardians, and local stakeholders to special events and community dinners, creating a social dynamic within the F2S program (<http://www.oxford.k12.ms.us/GFOS.com>). These skills can benefit students as they continue to develop life skills. In addition, for many of the students, they are learning for the first time where food comes from and how it is grown. Moreover, students are learning better environmental practices such as methods for recycling and composting. For advanced programs, school gardens are being constructed to teach best practices in agriculture, and farm tours are considered top choices for field trips (Whitten, M, 2006).

F2S can also penetrate deeper into the curriculum. For example in West Virginia, there are F2S programs that are being supported by erecting greenhouse facilities and building high tunnels to grow food onsite. Due to the development of this infrastructure, vocational programs now include greenhouse gardening. Agriculture students are growing up to 40,000 plants annually, while biology, chemistry, and environmental science classes are participating, also (Gutman, 2013).

The intent of this article is to provide teachers with evidence-based pedagogical recommendations to enhance student learning while relating to F2S initiatives. By complementing F2S programs with classroom learning, students will have a greater chance of developing knowledge and skills that will help them establish lasting, healthy eating habits.

After introducing the growth of F2S programs, the authors describe activities and provide websites for teachers to use to integrate language arts, mathematics, science, and social studies into a F2S program. This is followed by a discussion on the opportunities and barriers associated with the implementation of F2S programs. Finally, the authors provide conclusive remarks and future research ideas for exploring additional evidence-based pedagogy for teachers.

The Growth of Farm 2 School Programs

Many students do not realize that much of the food they eat can come from large farms and small gardens close to where they live. Furthermore, they do not connect the foods they eat with the ways they feel, act, learn, and look. This disconnect between eating and a healthy lifestyle is seen every day in classrooms where young children are too obese to move easily and where obesity causes children to miss school due to the early development of chronic illnesses such as type 2 diabetes, bone and joint problems, cardiovascular disease, and social and psychological problems.

To build knowledge on the sources of healthy foods and the importance of healthy eating, farm to school programs connect K-12 schools and local farms by serving local and healthy foods in school cafeterias or classrooms, providing health and nutrition education opportunities, and supporting small and

medium-sized local and regional farmers (Joshi, Azuma, Feenstra, 2008). These programs emerged to a recognizable level in the 1990s due to a growing concern surrounding the quality of school meals and the limited budgets in school food service (Izumi, Alaimo, Hamm; 2010). For instance, on a national scale, F2S programs have ballooned to serve over 21 million children per year. The U.S.D.A. Farm-to-School census indicates that 40,328 schools are involved in F2S programs and a total of \$354 million has been spent on locally produced foods (US Dept. of Agriculture Food and Nutrition Service, 2014).

With the growth of the F2S programs, the time is ripe to help students make essential life-style changes. Because students snack and eat meals several times a day, every day, they must be guided to think about their food choices several times a day, every day in and out of school. It is not enough for teachers to tell their students how and why they should develop healthy eating habits; their students must be taught and convinced.

Story from the Classroom

Imagine you are in a K-1 classroom. A young boy catches your eye. He is sitting in a chair slightly apart from the rest of the children who are sitting together on a colorful rug during story time. You see all the children sitting “criss cross apple sauce” (legs crossed) listening to the teacher. Why is this child sitting in a different place? The reason is because he is too heavy to get up easily from a sitting position on the floor. The little boy was not being punished for behavior; the teacher was accommodating his physical needs.

The story of the young boy is real. It was told to us by a student teacher and is representative of many first-hand accounts of the plight of overweight children at school. Extra pounds rob many children of the opportunity to participate fully in common physical activities. Ponderous, awkward movement slows or prevents over-weight children from joining in routine classroom activities, games, and free play. Preventing childhood obesity has become one of the new demands on the United States school systems.

You might be thinking, “It is up to the parents and family to provide nutritious meals and control the fatty and sweet snacks their children eat.” or “The schools already have too much to teach and should not be required to solve the obesity problem.”

However, it is important to consider that children come to school to learn academics and life skills. Therefore, it is a natural step for schools to integrate the life skills of healthy eating into the academic curriculum. With the advent of the Common Core State Standards (CCSS), content integration through literacy, social studies, and mathematics is emphasized. The activities described in this article show how it is possible to integrate academic content area learning with F2S concepts.

Principles for Teaching and Learning

In this section, we emphasize the importance of teaching about food and lifetime healthy eating habits and provide strategies and activities K-6 teachers can use to integrate F2S facts and dispositions into their curriculum. The activities in this article enable students to make connections across the curriculum as they explore F2S concepts. Literacy, mathematics, social studies, science, and the fine arts are integral parts of the activities. Teachers can easily adapt any of the activities to fit content area standards for their particular grade level. Pedagogical recommendations for each activity are based on the following five Power Principles that stimulate interest and motivation for learning: The Power of Mascots and Symbols; The Power of Movement; The Power of Role Models; The Power of Facts; and The Power of Partnerships. These principles were derived by the authors from many years of experience working with teachers and students in grades K-12.

Promote Student Engagement through the Fine Arts

To establish partnerships among classrooms, schools and the community, have children make up songs, poems, raps, and jump rope jingles to integrate F2S concepts in the curricula. Tap into the talent at middle and high schools to help younger students write, perform, and/or record songs. Consider making this a community event by using talent from local universities, the community, and local bands. Use several classrooms of children to sing the chorus. The authors developed lyrics to popular children's songs that promote F2S concepts (Figure 1). We are sure your students, young and old, can come up with something that will "beat" these. These songs can be used as examples to stimulate students' creativity that will motivate them to write their own lyrics.

Figure1: "Corny" F2S songs that are "food" for thought

Food from the Farm (*Tune of Wheels on the Bus*)

Food from the farm tastes awfully good, awfully good, awfully good.

Food from the farm tastes awfully good and it makes you strong and healthy!

Put a carrot in your mouth and crunch, crunch, crunch, crunch, crunch, crunch, crunch, crunch, crunch.

Put a carrot in your mouth and crunch, crunch, crunch and it makes you strong and healthy.

Repeat for other fruits and vegetables:

Put a grape in your mouth and squish, squish, squish, squish, squish, squish, squish, squish...

Put an apple in your mouth and munch, munch, munch, munch, munch, munch, munch, munch, munch, munch...

Put an orange in your mouth squirt, squirt, squirt, squirt, squirt, squirt, squirt, squirt, squirt...

Put celery in your mouth and chew, chew, chew, chew, chew, chew, chew, chew, chew...

Put a Healthy Food In; Take a Healthy Food Out (*Tune of Hokey Pokey*)

Put the broccoli in, take the broccoli out

Put the broccoli in and shake it all about.

Eat your broccoli daily and you give a little shout

Healthy, stealthy, treathy is what it's all about!

Dingle, wingle, stingle is what it's all about

Old MacDonald Had a Farm

Old MACDONALD had a farm

E-I-E-I-O

And on his farm he had some corn

E-I-E-I-O

With a chomp chomp here

And a chomp chomp there

Here a chomp, there a chomp

Everywhere a chomp chomp

Old MacDonald had a farm

E-I-E-I-O

Old MACDONALD had a farm
E-I-E-I-O
And on his farm he had some broccoli
E-I-E-I-O
With a crunch crunch here
And a crunch crunch there
Here a crunch, there a crunch
Everywhere a crunch crunch
Old MacDonald had a farm
E-I-E-I-O
Repeat with new food and sound.

Arts and crafts are excellent vehicles to enhance active learning of concepts in multiple content areas. They demonstrate six recommendations that can be used to integrate the arts with writing. These recommendations lend themselves easily to activities on the creation and use of F2S mascots and symbols. These symbols serve as visual reminders of food sources and nutritious food choices. Below are arts and crafts ideas that can be used to engage the students in active learning:

- Creating a symbol: Students can design a “Farm 2 School Mascot” compiled of foods that represent their idea of healthy eating. The elements of art could be incorporated into the design. This could be set-up as a school-wide competition for bringing awareness to students and parents about what foods are healthy, where they come from, and why this matters for their health.
- The “Farm 2 School Mascot” that they design could be used in reading/language arts to be a prompt for writing. Ask the students to name their mascot like “Cornelia Shucks”. They would then choose a title (e.g. Cornelia Shucks Meets Candy Corn: There is Not a Kernel of Truth in What One of These Characters Proclaims), and write a story about the character using the story elements (e.g. character, setting, problem, solution).
- The students can compose comic strip stories, some with the mascot as the main character. Stories are written with a beginning, middle, and end using websites that have templates. These templates allow students add backgrounds, characters, and talk bubbles. The talk bubbles permit students to add dialogue. An example of a website that is free to use and print the comic strip is comic creator at <http://www.readwritethink.org>. Besides the aesthetics and design of the comic, art is obviously incorporated through the understanding of art terminology like, background, foreground, perspective, etc.
- Drama is another way the arts can be integrated with the study of healthy foods and practice their fluency in reading. The students can use free Readers Theater scripts from a website like <http://www.timelessteacherstuff.com> to act out a story. The students could design masks for the different parts in the script. There are many stories to choose from at this website and others. The website also provides a printable critique sheet for the audience to evaluate the fluency of the character parts. A couple of possibilities of books to choose for the lesson would be *The Very Hungry Caterpillar* by Eric Carle and *A Bad Case of the Stripes* by David Shannon. The girl in the story, *A Bad Case of the Stripes*, refuses to eat a healthy food that she loves, because she is afraid her classmates will make fun of her. This book will stimulate good dialogue among cooperative groups about social interactions and letting them influence healthy eating.
- Bring several fresh vegetables and fruits, such as apples, bell peppers, onions, celery, oranges, etc. to use as a stamp for artwork. Cut the vegetable or fruit in half and have tempera paint or acrylic paint in pans on the table. Also, place a paper towel beside each student so that they can remove excess paint from the

fruit before they stamp. They can change fruits or vegetables or colors to stamp their designs on a large piece of paper. The teacher could mount or mat these pictures and display them. Allow the students to discuss the vegetable or fruit they used and would it be a healthy choice to eat.

- Ask the students fold a piece of paper vertically into thirds and then have them draw a scene in each section depicting food being grown on a farm, food transported to local farmer's markets or grocery stores, and finally food on their dinner table or at the school cafeteria.

Promote Healthy Eating through Language Arts

Because language arts is all about the communication of words and ideas, teaching the six strands of language arts (reading, writing, speaking, listening, viewing, and visually representing) are easily integrated into music, art, and movement activities as well as academic content areas. F2S activities can be incorporated into narrative, persuasive, and informational genres. Due to the wide and diverse scope of the content the activities can be guided by each of the Power Principles listed above. For example, students can create stories about their mascot, write songs or drama skits that include movement, use oral persuasion to be a role model, and establish a partnership with other students, people in the community, and popular local and national sports stars, musicians, and media figures. The following are examples of some other ways to integrate F2S concepts with the language arts strands:

- To integrate the science of healthy eating with letter writing, have students write to famous singers, tell them about their class F2S project and persuade them to sing about healthy food and farm to school songs.
- Use funny food art pictures, as a topic, to motivate students to write a humorous story using lots of adjectives. Funny food art pictures can be found on the Internet or in magazines.
- To promote the delicious qualities of fresh fruits and vegetables, bring a piece of fruit or a vegetable for each student in your class. Have the students inspect the fruit or vegetable by looking, feeling, smelling, tasting, and even listening to the sounds of the food as they bite into it. Have students write a list of words that describe the food. Make a large chart and label it something like, "Delicious Words". Write the students' words on the chart and keep handy for students to use as a reference for writing and speaking.
- To establish the connection between healthy food choices and strong muscles and stamina, have your students write want ads for healthy foods. First let your students analyze ads from the local supermarkets to determine the tricks of the trade of how professional writers entice the customers to purchase food. Have students add words from the chart of "Delicious Words" so they can refer to it when writing their ads.
- To differentiate instruction, use multigenre reading and writing. Multigenre, as its name implies, is text composed of various genres such as argumentative, informational, and narrative text. Within each of the primary genres are numerous subgenres such as poetry, songs, explanation, and how-to procedural texts. Through multigenre literature, students can read, write, speak, listen, and visually interpret and represent information in different ways. For example, a lesson on healthy foods can incorporate the reading and writing of songs, poems, directions for healthy recipes, descriptive information, and argument or persuasive texts. These disparate genres are combined into a class book, poster, or tri-board displays. There is literally something for everyone as students work to create a healthy class project. Multigenre projects meet many of the CCSS for Reading, Writing and Language.
- Read the book *I Know an Old Lady Who Swallowed a Pie* by Alison Jackson and have the students write a sequel to the book. In the sequel, have them choose healthy foods for the story. Once the

students have completed the story and illustrated it, have an author's chair placed in the front where they can sit and share their books and the healthy food choices they made.

- Older students can make a video trailer using a free download, such as Microsoft Photo Story 3, to promote their book and encourage classmates to read it.
- If the students cannot make a video trailer, pair them together, and have one be the interviewer while the other is the interviewee to talk about their books.
- Another possibility for sharing their books would be to have the students prepare a poster presentation that promotes their book. Being sure to stress the positive reasons for the healthy food items. After students present the posters to the class, then hang them in the hallway where more students can see the posters and hopefully, get some good information and healthy food facts. Be sure to display all student posters.

Promote Healthy Eating through Science and Mathematics

Like students in West Virginia who are growing up to 40,000 plants annually, while biology, chemistry, and environmental science classes are participating in the F2S movement, we suggest that teachers promote student engagement through science and mathematics. Activities listed below highlight ideas that can be utilized for lesson plan development. Each of these activities relates to one or more of the Power Principles that promote learning.

Although these recommendations can help teachers promote student learning utilizing F2S programs, the authors are keenly aware that some schools may not already have a F2S program. In the next section, the authors highlight the opportunities and challenges for implementing a F2S programs. This information will assist any champion in the school who is interested in implementing a F2S program.

- Have students calculate the amount of sugar or calories in their favorite foods or drinks and then, create a pie chart to show their findings. Have them represent the amount of sugar in foods they eat and drink by displaying actual sugar.
- Students can do an experiment about how sugar affects the body by using the activity found at the How It Works Website, <http://lifestyle.howstuffworks.com/crafts/other-arts-crafts/science-projects-for-kids-nutrition-and-health1.htm>. The activity talks about how sugar gives you a sugar buzz or headache and when it wears off, you are still hungry.
- Several weeks ahead of the lesson, have students bring in cereal boxes or collect them yourself for F2S lesson. Be sure you have enough for each student to have two different boxes. With the cereal box, have students compare sugar and grain content of the two boxes of cereal. They can use the nutrition label on the side of the box to help with this. Once they have this information, let them research whether they are healthy or unhealthy choices.
- Using the cereal box label, have the students find the ratio of sugar to grain.
- Figure the percentage of sugar per box by using the serving sizes on the label.
- Have students figure the volume of a cereal box.
- Use the side panel of a cereal box as a means for non-standard measurement and have the students measure items in the classroom, such as tables, etc.
- Ask students to label the vertices, faces, edges of a cereal box or other food product boxes.
- Place a map grid of a farmer's crop field on each cooperative groups table and have them figure the number of acres in the field.
- Have students calculate how many bushels to the acre the farmer's field produced, if he made 10,000 bushels of soybeans on one hundred acres.

- Collect menus from different restaurants and fast food businesses and have the students select a meal. Then, have them research the ingredients in the food and the portion size to find out if it is a healthy choice. Let the students share their findings with the class.
- Cut out pictures from a magazine of different foods that you might use in a recipe. Put a label on it with a price. Put the foods in the center of the table and have students shop with a budget and place foods in a lunch bag with their name on it. They should strive to choose foods for their bag that would make a healthy meal and stay within their budgets. Be sure to discuss with the students, reasons why some foods are healthy and others are unhealthy? Examine nutritional facts and how to make healthy choices. Discuss how healthy foods affect the way people feel, look, act, and live.
- Climate Change, The Debate <http://www.pbs.org/wgbh/warming/debate/> - Have the middle grade students read what these top scientist have to say from this website about climate change, then let them get into cooperative groups and discuss the different views and its impact on the world's food sources. Next, give students time to individually research the topic. Then, have the students compose a persuasive paper about their opinion about climate change and its impact on food and the world's survival. Also, discuss how the weather affects local farmers' crops and availability of foods in the local markets or grocery stores.

Implementing Farm to School: Opportunities and Challenges

There are significant opportunities related to F2S program, yet many barriers exist as well. (Joshi, Azuma, & Feenstra; 2008). In this section, the authors highlight these opportunities and challenges associated with attempting to implement a F2S program.

Opportunities for the Implementation of a F2S Program

First, public policy is a key tool for strengthening and implementing F2S programs. State governments that enact policies directly related to F2S programs have a stronger presence of active and viable F2S activities, according to Schneider, et al. (2012). Using pooled, cross-sectional data from 2000-2006, the research found that statewide, coordinated efforts centered on formal policy contributed to enhancing participation in F2S programs.

Moreover, as F2S programs are implemented, data suggest that participation rates are increasing. According to the National Farm to School Month initiative, (www.farmentoschoolmonth.org) "the choice of healthier options in the cafeteria through Farm to School meals results in consumption of more fruits and vegetables with an average increase from .99 to 1.3 servings per day. Additionally, schools report a 3% to 16% increase in school meal participation when farm-fresh food is served through Farm to School programs."

Not only are F2S programs being touted for their benefits to students, but there are also profound benefits for the farmer. By developing a new and extensive market, local farmers are able to take advantage of selling produce to institutions. Establishing a strong and dependable outlet is crucial for local farmers. For example, most local farmers sell at farmers markets or through community supported agriculture (CSA) programs. In regard to the economic impact of locally grown food, Kane, Wolfe, Jones, and McKissick examined the impact of Georgians purchasing more locally grown products. Their research indicates that an increase of \$10 a week per household could yield \$1.9 billion for the state of Georgia. Furthermore, for every 5% percent increase in local products purchased, the state would gain 345 new jobs, increase aggregate income \$13.6 million, and induce \$43.7 million in sales (Center for Agribusiness and Economic Development & College of Agriculture and Environmental Sciences, 2010).

Challenges to the Implementation of a F2S Program

While there are challenges and barriers regarding F2S implementation, there is also much encouragement. As F2S programs emerge and grow throughout the country, student participation continues a positive trend. Furthermore, data indicate lifestyle changes are manifesting among students. Parents are reporting positive changes in social skills and self-esteem, responsible behaviors, saving money, and an improved work ethic among children (Joshi, A., Azuma, A., & Feenstra, G.; 2008). In addition, student knowledge and attitudes about healthy eating and lifestyles are shifting. Basic knowledge of food origination as well as nutritional value of food enhances with the implementation of F2S programs. Also, evidence supports that there is a marked increase with lunch service participation among teachers and administration in F2S programs.

Although there are great benefits when implementing F2S programs, there are many challenges. For example, transitioning a cafeteria from a food delivery system that provides highly processed foods to a kitchen that cooks from “scratch” is not an easy task. This transaction has to be cost effective for the institution.

In addition, a short growing season affects the reliability of creating a constant local food system. Even in warmer southern states, there are 2-3 months during the year that crops are generally not grown. Without proper infrastructure, F2S programs have to adjust purchasing processes due to unavailable products. A short growing season can affect the supply. Although the local food system is expanding, there is still a limited supply in the local food system to support the demand from school districts that deliver thousands of meals a day.

Logistics can also be a challenge within local food systems. Logistical complexity can range from not having transportation processes that are up to code to the lack of proper loading docks. Kitchens that lack the capacity to handle fresh produce have been noted as a problem, too (Izumi, B., Alaimo, K., & Hamm, M.W; 2010). Many schools serve prepared meals, which do not require the skill set or labor intensity like “scratch” meals. Due to the lack of skills and infrastructure, some institutions may have to reinvest resources.

As F2S programs continue to compete with the National School Lunch Program (NSLP), proponents argue the nutritional value of F2S programs. NSLP serves over 30 million children daily and costs over \$10 billion a year. Its goal of “enhancing childhood nutrition while providing market support for US agricultural products”... is based strongly on the reliance of processed food, which is concentrated with sugar, fat, and high levels of sodium and inadequate fiber (Conner, King, & Kolba, Kolokinsky, & Trubek; 2011). However, the F2S movement concentrates on nutrition-rich, locally produced food. Competing with the industrialized food system is a challenge for advocates of the F2S movement.

Lastly, conflicting policies, multiple stakeholders, competing agendas, and complex regulations all impede school lunch programs; altering the systems has been defined as a “wicked problem” (Conner, Abate & Liquoir; 2010). This “complexification” adds to the challenges as F2S advocates attempt to implement successful F2S programs. For example, along with a lack of funding and aforementioned barriers, coordination and capacity are issues of concern. For example, connecting farmers and schools have often been a challenge because both agents have not built the relationship. Many times, due to the nature of the social dynamics, a coordinating agent must link the farmers and school personnel together. However, farm to school program advocates have asserted that school food service represents a substantial and stable market for small-and mid-size family farmers who sell directly to schools (Izumi, Alaimo, & Hamm; 2010). Tying systems and processes together to implement and enhance the F2S programs can be challenging. However, once the mechanisms and process are developed, many benefits emerge (Conner, D., King, B., Kolba, C., Kolodinsky, J., & Trubek, A.; 2011).

Discussion and Conclusion

Farm to school programs are emerging throughout the country. This movement is founded on the notion of bringing healthier local food to students. As obesity continues to plague many students, health advocates are promoting the benefits of fresh, nutritious food.

From a health perspective, over the years, society's focus on processed and fast foods has caused unhealthy eating habits and poor eating decisions. Currently, obesity is an epidemic in the United States that is costing tax payers billions of dollars annually. With concerns of growing rates of obesity and commensurate shorter life expectancy rates, F2S programs are being utilized as tools to curb calorie intake of students. For example, schools in Minnesota are addressing obesity by teaching critical thinking and decision making skills with children, a lasting and transferable skill set necessary for making healthy food choices. School officials and teachers suggest that once students can relate and connect the food to the source and identify its potential benefits, they are more likely to consume the produce (Doen, 2012). Teachers and administrators are faced with the challenge of helping students make the connection between local food sources and healthy food choices.

Teachers can utilize the five Power Principles to create lessons that stimulate interest and motivation for learning. Through activities integrated with academic content areas, we have provided tools they can use to create a F2S curriculum. In addition, to the activities, we provided additional resources to promote and enrich learning. Figure 2 highlights numerous websites and apps related to F2S. These websites and apps can be used with an iPad or home and classroom computers by teachers, students, and parents as a resource for F2S lessons. If there is no access to electronic devices, many of the websites offer templates that can be printed by the teacher and used by students. The URL, <http://www.freetech4teachers.com/2010/12/10-ways-to-create-comics-online.html>, provides a list of websites with templates. We encourage teachers to utilize these resources to promote healthy eating and learning. Moreover, figure 3 provides teachers with suggested readings that promote literacy using food or food related characters. These additional resources will provide ample opportunity for enhancing student learning.

Figure 2: Farm to School Resource Websites

<http://www.timelessteacherstuff.com> This website offers readers theater scripts, printable fluency critique sheets, and other resources for a reading/language arts class.

<http://www.freetech4teachers.com/2010/12/10-ways-to-create-comics-online.html> A page of websites that offer comic strips you can complete online and print or print templates and use as a hardcopy.

<http://www.readwritethink.org> The "Comic Creator" allows students to make comic strips using the website's graphics, talk bubbles, and other props. The students would create this online and print it.

<http://www.funnyfoodart.com> Students can view this site to get ideas about how to use food in art, inspiration to design a food mascot, and funny food art pictures to prompt for writing.

http://www.buyjumpropes.net/Jump_Rope_Rhymes_s/39.htm Jump rope jingles to use to promote a healthy life style by adding movement and encouraging exercise.

<http://www.fb.org/index.php?fuseaction=newsroom.fastfacts> The American Farm Bureau Federation provides fast facts about agriculture.

<http://www.drpboddy.com/nutrition.html> Dr. P. Body's Learning Fun Center where Health and Safety are Made Easy. This website has a nutrition award certificate that can be printed, activities that allow students to draw foods on a plate that are healthy, and good nutrition facts.

<http://lifestyle.howstuffworks.com/crafts/other-arts-crafts/science-projects-for-kids-nutrition-and-health.htm> How stuff Works provides science projects for kids to help them understand nutrition and health.

<http://www.schoolnutrition.org/Content.aspx?id=752> School Nutrition Association website shows a list of children's books about nutrition.

<https://www.supertracker.usda.gov/> The United States Department of Agriculture, Super Tracker website allows students to use Food-a-Pedia to find nutrition information about foods. It also can track your food and physical activities and give tips and support for healthier living.

Figure 3: Children's Literature Selections for Farm 2 School Thematic Unit

Narrative Books

Herb the Vegetarian Dragon by Jules Bass and Debbie Harter

The Very Hungry Caterpillar by Eric Carle

A Bad Case of the Stripes by David Shannon

Cloudy with a Chance of Meatballs by Judy Barrett

Picky Nicky by Cathy East Dubowski and Mark Dubowski

The Princess and the Peas by Caryl Hart

Veggiesaurus Lex by Karen Fine

One Red Apple by Harriet Ziefert

The Beastly Feast by Bruce Goldstone

Belly Laughs: Food Jokes and Riddles by Charles Keller

Informational Books

Good Enough to Eat: A Kid's guide to Food and Nutrition by Lizzy Rockwell

Eating the Alphabet by Lois Ehlert

One Bean by Anna Rockwell

The Vegetables We Eat by Gail Gibbons

How to Teach Nutrition to Kids by Connie Liakos Evers

The Science Chef: 100 Fun Food Experiments and Recipes for Kids by Joan D'Amico, Karen Eich Drummond, and J. D'Amico

Nutrition Fun with Brocc and Roll by Connie Liakos Evers

While some schools have not yet adopted a F2S program, the authors recognize the significant efforts that it requires to establish one. However, as teachers and administrators attempt to develop a F2S program, the opportunities highlighted in this article may far outweigh the barriers.

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A teacher with deep pedagogical knowledge understands how students construct knowledge and acquire skills in differentiated ways, as well as how they develop habits of mind and dispositions toward learning. A large proportion of technology-based learning activities that have been developed in the past to illustrate technology integration, through their lack of emphasis upon content and pedagogy, illustrate an incomplete and comparatively superficial form of TPK. In this way, it becomes easier for teachers to match particular activities to specific content-based learning goals and standards, and, more important, to interpret and implement these activities in ways that are congruent with the disciplinary roots of the discipline-based content that students are learning. A strong current of food-systems research holds that local food systems are preferable to systems at larger scales. Many assume that eating local food is more ecologically sustainable and socially just. We term this the local trap and argue strongly against it. We draw on current scale theory in political and economic geography to argue that local food systems are no more likely to be sustainable or just than systems at other scales. The theory argues that scale is socially produced: scales (and their interrelations) are not independent entities with inherent qualities but strategies pursued by anatomy teachers consistently developing new approaches to deliver their curricula to support student education. The educational scholarship literature is well populated with articles detailing how TEL has been introduced into anatomy curricula to enhance student education, with such journals as *Medical Science Educator* providing useful outlets for such pedagogical developments. From social media, such as Facebook, YouTube, Twitter and Snapchat, through eBooks, podcasts and screencasts, to the latest virtual and augmented reality applications, anatomy teachers are embracing and adapting to the