

Evaluation of School Wellness Policies in North San Luis Obispo County

Report of the HEAL-SLO/ TCE School Wellness Grant

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STRIDE

SCIENCE THROUGH
TRANSLATIONAL
RESEARCH IN DIET
AND **EXERCISE**

Thank you to our dedicated health and wellness partners:

- **Central Coast Agriculture Network (CCAN)**
- **HEAL-SLO**
- **San Miguel Resource Connection (SMRC)**

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Executive Summary

The California Endowment (TCE) Grant

A two year grant (October 2008-2010) was awarded to the San Luis Obispo County Public Health Department (SLO-PHD) so that outside agencies could engage in school wellness policy (SWP) advocacy and community activities to aid in combating the growing epidemic of obesity among the county's high risk populations. Under SLO-PHD oversight, Healthy Eating Active Living (HEAL-SLO) proposed school district outcomes, objectives, and indicators. (Attachment A provides the SWP rationale while Attachment B contains the HEAL-SLO/TCE purpose and goals.)

In March 2009, a research team from newly formed STRIDE at California Polytechnic State University was contracted to review and evaluate Lillian Larsen Elementary Schools' eating and physical activity environments with the intent to create baseline and outcome measures for school wellness improvement and sustainability. In September 2009, a mid-cycle report summarized STRIDE's studies, observations and recommendations.

This final report evaluates Lillian Larsen's accomplishments against those mid-cycle recommendations and presents results and take-home messages. It also delineates any significant obstacles to progress and makes recommendations for the school's path forward for improvement and sustainability. First, a brief overview of the childhood obesity issue and a discussion of prevention through school intervention might be helpful.

Background--childhood obesity:

The September 2009 mid-cycle report stressed the seriousness of the childhood obesity issue—both nationwide and in San Luis Obispo County. (Obesity definitions and weight classification charts are included on page 10 and additional information, studies and links regarding this epidemic can be reviewed in Attachment C.) *In short, childhood overweight is one of the most serious problems currently affecting individual and public health.*ⁱ It may be attributed to a variety of behavioral factors such as poor eating habits, poor food choices, and lack of daily exercise, as well as the basically obesogenic environment in which we all live. Some reasons for concern and prevention include:

- Being overweight or obese increases many health risks for children
- Childhood obesity increases the risk of obesity in adulthood
- Obesity is starting at earlier ages.

Prevention—the logic and challenges of school intervention:

Providing resources for primary prevention in children is advantageous. The economic costs incurred by the obesity problem and its treatments are steep and may be underestimated.ⁱⁱ Schools represent a logical site for prevention because children spend approximately 6 hours a day attending classes most of the year, where 1-2 meals are consumed and resources such as school nurses and physical education programs are already in place.ⁱⁱⁱ Although STRIDE offered recommendations which were designed to be less cumbersome for teachers and administrators, STRIDE acknowledges that the continuing statewide school climate of severe budget cuts and resource limitations has put a strain on many schools, including Lillian Larsen. San Miguel Joint Union School District experienced a layoff of 7 teachers in 2010. Wellness progress was also somewhat impeded by Lillian Larsen's administration turmoil and changes during the grant period.

Summary of Recommendations, Results and Take-Home Messages:

Lillian Larsen's progress toward healthy eating and physical activity was measured against the eight overall recommendations found on pages 26-29 of the mid-cycle report; with special attention given to the areas of focus targeted by the school. For Lillian Larsen, end-point data collection involved four activities: photo documentary; direct observation of physical education and recess, a key informant interview where school wellness was rated with standardized CDC School Health Index Modules; and a plate waste study. A full assessment is included in the body of this report. The following is a list of the original recommendations, along with the results and take-home messages:

1. Establish "Buy-In" from All School Staff

Leadership is a key to success in the health and wellness arena. Lillian Larsen has some excellent champions for change, including Eileen Rogers, PE teacher; Laverne Buckman, the SMRC grant coordinator, and Christina Wilkinson, the agricultural sciences teacher and Soils2Succulents program leader, just to name a few. Because of these role models, student involvement with wellness activities is increasing.

The Food Services function, responsible for serving student lunches, is a pivotal part of any school's ability to make positive wellness changes. It can be challenging to introduce new foods and changes due to governmental guidelines and budget concerns, however there are resources and strategies within the school's control that can be furthered. More work needs to be done to improve menu plans, such that they include a variety of foods and also appeal to children. The school must be able to count on that function to step out of comfort zones and lead this direction. Only with strong leadership can Food Services make the changes necessary for optimal student wellness.

Overall, progress on school staff "buy-in" was also somewhat impeded by Lillian Larsen's leadership transitions during the grant period. However, strong buy-in demonstrated by new school leadership will have a positive future impact.

2. Have Lunch Groups Pilot "Recess Before Lunch":

Thanks to third grade teacher Mrs. Learned, this recommendation was adopted for a 9-week pilot in her class toward the end of the school year. Limited pilot data showed evidence of reduced plate waste, as well as better student eating habits and popularity with students. STRIDE applauds the school administration for changing the lunch and aide schedules to support the recess-before-lunch model for the entire school beginning this fall. A follow-up plate waste study is recommended for fall 2010 and again in spring 2011. Please contact HEAL-SLO for guidance and advice on funding.

3. Family Involvement: Establish Parent Network:

STRIDE recommended that the school wellness committee promote involvement by students' families and other members of the community in order to address the diverse needs of the students and their families, maximize resources, and ensure that health-related messages are consistent across the school, home, peer groups and community. One area of success included the Healthy Hornets' (HH) presentation of health messages to community groups. Additionally, a monthly "Nutrition Nuggets" newsletter is being sent home. Moreover, the Soils2Succulent Program has reached families by sharing freshly harvested produce with them.

Formation of the Wellness Council (WC) and establishment of quarterly meetings is a great success. However, recruiting WC parent representatives is necessary to fully enhance family involvement in health and activity. STRIDE suggests utilizing HH students as healthy eating/physically active role models by scheduling them as speakers at Back-to-School nights and other gatherings. HH students who believe their parents are healthy eating/physically active role models, could recommend their parents as speakers as well. Additionally, regularly sharing School

Wellness Program (SWP) information at already-established parent meetings would incorporate these ideas on a regular basis.

4. Taste Testing Fruits and Vegetables

This recommendation was heartily adopted as evidenced by students' pleased faces and quotations displayed on the photo documentary. The Healthy Hornets offered tastings of new flavors in the cafeteria, over lunch, twice per month and students were excited for tasting days. In a review of tasting voting results, STRIDE was impressed with students' willingness to try and enjoy new foods. Students also received expanded nutrition education through the Central Coast Agricultural Network's (CCAN) "Farm to School" Program. Continuing these tasting days and utilizing CCAN's expertise and resources would be a boon for the entire school.

5. Increase Physical Activity during PE and Recess, Enhance Educational Outcomes

Researchers originally evaluated the PE and Recess programs in spring 2009 and returned in spring 2010 to measure progress in this area. It had been recommended that the schools' physical activity programs include moderate/vigorous activity for a minimum of 50% (and preferably 80%) of class time. The perception, based on end-point key informant data, was that students were still active less than 50% of the class time and that their participation in extracurricular physical activity programs went down. This could not be corroborated by researchers since their observations occurred during a fitness testing and not during a 'normal' PE class. However, the school did a great job of implementing the suggestion for choosing activities which encourage continuous movement--such as soccer and running—and would benefit from continuing that strategy.

Lillian Larsen's PE teacher, Eileen Rogers, does a wonderful job. She has been recognized in the state by the 2010 Governor's Council on Physical Fitness and Sports for the Gold Coast Region. Eileen was selected as the 2010 Bronze Medalist in the "Teacher of the Year" category but she obviously can't do it all. Therefore, it is critical that teachers running their own PE classes buy into and be responsible for accelerating their students' PE activity level—in both duration and intensity. This would likely enhance educational outcomes without costing the school any extra money. Employing creativity and utilizing role-models is key. For instance, during this last year, HH assisted at times with PE classes and with the student body—helping instill the importance of regular exercise. This role-modeling by middle-graders was very effective. It is highly recommended that each teacher use role-models and continued creativity to get students moving more during PE classes. One idea is to utilize "energizers" to encourage 5-10 minutes of physical activity during class. (See http://www.ecu.edu/cs-hhp/exss/upload/Energizers_for_Grades_K_2.pdf for examples from East Carolina University.)

Researchers' observations of recess generally showed that the amount of student time spent doing no physical activity decreased, and that during morning recess students spent less time sitting around than last year. Many more students were observed using jump ropes during recess than during the spring 2009 observation. However, students would still benefit from increased activity and intensity--especially during the lunch and afternoon recess periods. Perhaps the best way to do this is to reduce student time spent waiting in line for a turn at various sports. Providing more than one ball and having aides encourage children to start more than one game is a simple, low-cost solution which STRIDE still urges the school to adopt.

One very positive intervention was the successful "recess-before-lunch" pilot implemented by Ms. Learned's third grade class. Building on this success, it will be implemented school-wide this fall.

5a. Promote Extracurricular Physical Activity

It was recommended to go beyond physical education classes and recess activity and provide opportunities before, during, and after school hours for fun fitness activities and sports programs. HH's helped with this recommendation by implementing several walk-to-school days. HH's also gave daily healthy living tips through the morning announcements.

Transportation to and from school was not targeted as a primary objective for intervention since walkability to Lillian Larsen continues to be a problem due to lack of sidewalks, cross walks and safe railroad crossings. With current budget constraints, Lillian Larsen is encouraged to continue to creatively search for activities which enhance extracurricular physical activity without requiring additional money—such as jump rope competitions or walk-a-thons.

6. Continue to Promote School Garden

Lillian Larsen's growing and flourishing school garden is considered a big success. In fact, it was selected to be one of five programs featured by the California Farm to School Program. (See www.cafarmtoschool.org and click on Alyssa's story.) Although not initiated by this grant, the Soils2Succulents Program, with Teacher Christina Wilkinson, has increased involvement with the school garden and stimulated garden and nutrition education as well. This afterschool club harvests fresh produce. Some of their produce was utilized for tastings in the cafeteria, where students were enthusiastic about trying new foods. *In the future, if the opportunity were presented to them, students would like to take a greater wellness role in the cafeteria.*

Another success was the Central Coast Agricultural Network's (CCAN) "Farm to School" Program which made it possible to bring fresh produce from local farmers to the school cafeteria.

7. Establish "User-Friendly" Identification System for Healthy Snacks and Correct Portions

In order to emphasize healthy snacks and correct portion sizes, it was recommended that a flyer be developed and distributed in tier 1 and 2 snack nutrition information, in Food Bank back packs and in the parent newsletter. Alternatively, HH produced a presentation for some classes and the community, which included "Rethink Your Drink" and "How-to-read-a food label" sections. Additionally, an easy-to-use nutrition curriculum is currently in place for primary grades.

It was previously suggested that easy-to-use equipment (such as smaller-sized salad tongs and dressing dispensers) be made available, but that has not happened. Additionally, SMRC offered a pediatric salad bar to Food Services (Nova Cassidy) last year, after recognizing that the one currently used is too tall for the smaller students. This offer was declined. Likewise, Lillian Larsen declined the opportunity to apply for funds for a larger refrigerator as part of an equipment-to-school kitchens grant. Nova said that she did not accept the equipment offers due to space limitations. With the initiation of the Breakfast First program, the need for additional refrigerator space will continue.

Key informant data indicates that the school is continuing to restrict access to foods and beverages of a minimal nutritional value or that don't meet SB 12 requirements. It also showed that fundraising efforts continued to be supportive of healthy eating. However, it did not appear that any identification or labeling system was implemented to help students or their parents identify their own correct portion or make their own healthy snack determination. Exploring Oceano Elementary Schools' "Go-Slow-Whoa" foods program would be one way to move toward a "user-friendly" identification system. Andrea Keisler, Boys and Girls Club Coordinator, is a good contact for this program.

8. Limit Access to Competitive Foods

The phrase “competitive foods” typically refers to foods and beverages which are offered at school, outside of the school meal program. The usual culprits---chips, candy, sports drinks and cookies---are high in calories, fat, saturated fat and/or sugar. Research shows that access to competitive foods in school (whether offered by the school or brought from home) reduces the quality of student’s diets, yet it’s easy to see that many students will pass up a bran muffin if there are donuts around for sale or for free.

Lillian Larsen made the biggest strides in this area by ensuring the soda vending machine contains healthier options and is turned off during school hours. Additionally, the vending machine has a new image on it for marketing the “healthier” option. This is a good start. The school should review the real finances of the vending machine and ensure it truly makes a profit once electricity and maintenance costs have been factored in. The school could expand upon its success by ensuring water fountains are clean and functioning and making healthy food options the easier, default choice. In one case study, vending services were taken over by district-level food services, and only healthy options were made available. Sales increased, and after the initial 30-month period of paying for the machines, vending became a money maker for the district.^{iv}

At the salad bar, the healthier foods should be the easiest ones to reach and the saltine crackers could be removed or replaced with a more wholesome cracker. A concerted effort could be made to change the cookie reward. And, since most of the student population is on the free-lunch program, restricting its contents to primarily healthy lunch options would be effective.

Sustainability

Lillian Larsen has spent a considerable amount of time and effort in making school wellness changes---much to its credit. However, even with the best of intentions, changes are often difficult to sustain. Leaders move on to new positions or grant periods end. Yet, we want our student’s healthy eating and physically active habits to stay in tact. So, what is the key to sustainability?

In a national study examining school wellness policies across the U.S., 68% of policies met the mandate to name an agency or a group responsible for monitoring the policy and evaluating its implementation. Nevertheless, 79% of the policies reviewed for the study did not include language to support the development of an implementation plan with measureable objectives, dates and responsibilities.^v

For change to last there must be a system in place. ***The goals and objectives of the SWP need to be monitored, measurable, and a written plan should in place to make revisions. Lastly a person (point of contact) needs to be assigned (documented) to each area on the SWP.***

Still, mere compliance with an SWP doesn’t ensure a powerful policy.^{vi} The heart of the effort will still be with people--not in a document. Schools and community partners must continue to work together to strengthen wellness policies and programs.

Conclusion

We hope these results and take-home messages have been helpful. An in-depth, full assessment follows. This past school year has been a challenging one for Lillian Larsen due to budget constraints and leadership changes. Regardless, the school has generally promoted healthy eating and increased physical activity with excitement and enthusiasm. While some changes still need to be pursued, we’re confident that Lillian Larsen Elementary School can continue to make great strides in its wellness program and achieve overall success.

Ultimately, the reason these challenges must be addressed is for the health of the child.

Definitions

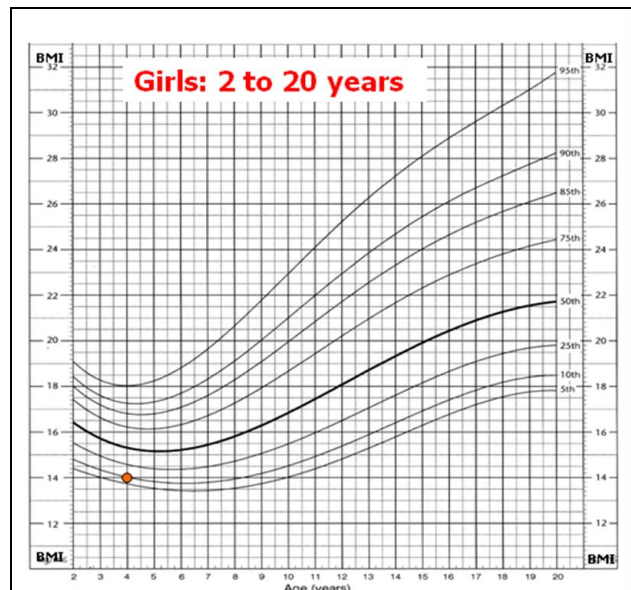
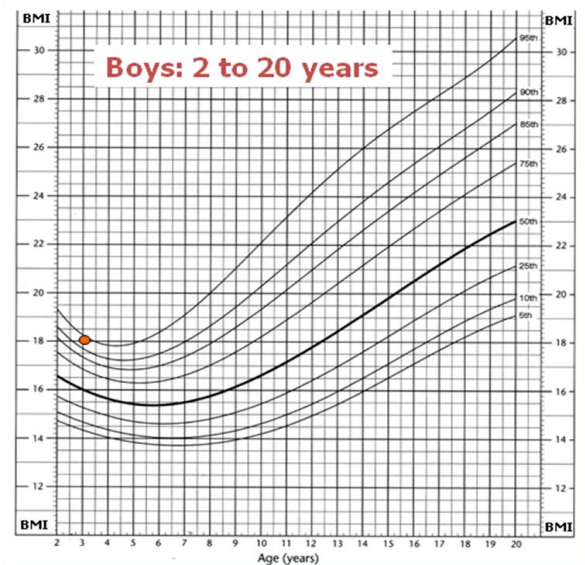
Body Mass Index (BMI) is a number calculated from a person's weight and height. BMI provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems.

Weight classifications are defined in the chart below.

Weight Classifications using Body Mass Index (BMI)			
http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html		http://www.cdc.gov/healthyweight/assessing/bmi/	
Children	Adults		
Use age sex-specific growth charts	BMI number calculated from a person's weight		
<i>Underweight:</i>	$\leq 5^{\text{th}}$ percentile	<i>Underweight:</i>	BMI ≤ 18
<i>NORMAL Weight:</i>	6 - 84th percentile	<i>NORMAL Weight:</i>	BMI 18-24
<i>OVERWEIGHT:</i>	85 - 94th percentile	<i>OVERWEIGHT:</i>	BMI 25-29
<i>OBESE:</i>	$\geq 95^{\text{th}}$ percentile	<i>OBESE (note there are 3 obesity classes):</i>	BMI 30+

www.cdc.gov/healthyweight/assessing/bmi/index.html.

CDC BMI-for-Age Charts for Boys and Girls



Full Assessment

Key Informant Interviews and Modified School Health Index Score Cards

Lillian Larsen School (K-8), San Miguel, California

Lillian Larsen School Wellness Policy:

Research Technique: Key Informant Interviews and Modified School Wellness Score Cards

People Responsible: David Hey, PhD, CHES; and Laurie Pugh, Research Assistant

Cal Poly Kinesiology – STRIDE

Baseline Data Collection: March through July 2009

Outcome Data Collection: March through April 2010

Date of report: 6/24/2010

Key Informant Interviews

The STRIDE research team conducted 5 key informant interviews in 2009 and 6 key informant interviews in 2010, with the purpose of getting a pulse on the effectiveness of school wellness policies for Lillian Larsen Elementary. Please see Attachment E for key informant interview scripts. Key informant interviews are qualitative (descriptive) in-depth interviews with people who know what is going on in a certain community; for instance at Lillian Larsen Elementary School. These “key leaders” or wellness “experts” (e.g., PTO moms, wellness committee members, health and PE teachers, food service managers, nurses and school district administrators) have first-hand knowledge, so we asked for their personal observations and unique expertise concerning the school’s wellness policy. As researchers, we are *very interested* in how the leaders’ view the effectiveness of their school wellness policies. These school experts provided *valuable insight* regarding the nature of problems and gave important recommendations for solutions.

Results:

Key Informant Interview Lillian Larsen Elementary, San Miguel (n=6)

Interviewees (all conducted in person)

- a. 1 food service manager
- b. 1 Junior High Special Education Teacher/Afterschool Garden Program Coordinator
- c. 1 PE teacher
- d. 1 Farm-to-School program coordinator (Note: Did not complete score card assessment)
- e. 1 San Miguel Resource Center coordinator
- f. 1 3rd grade teacher

Existing *Successes* based on Key Informant Perceptions:

School Administration Policy/ Community Enhancement and Engagement

1	Wellness Council (WC) formed (quarterly meetings)
2	Vending machine has healthier options
3	Vending machine is turned off during school hours
4	Vending machine has new image on the machine for marketing “healthier” option
5	President’s Active Lifestyle Award Challenge (PALA) initiated with confirmation logs
6	Participation of WC includes: 1 school board member, 2 teachers, and the superintendent/principal
7	Monthly student/family wellness newsletter “Nutrition Nuggets” being sent home
8	Sub grant with SLO Co. Public Health Dept. obtained to help engage Hispanic community – “Promotoras Program”
9	School wellness policy reviewed by WC and has acceptance
10	Sub grant with Central Coast Agriculture Network obtained to involve “Farm to School” program (local Ag.) with the cafeteria and include taste tests with expanded nutrition education
11	“Recess Before Lunch” (RBL) to be piloted K-6 next year
12	Primary nutrition education curriculum ordered, “Healthy Hornet” training scheduled
13	Quality PE program in place/implemented grades (3, 7, and 8 running every day)
14	New superintendent appointed (Feb. 11, 2010) has been “very receptive” to WC goals

Healthy Hornets

1	Healthy Hornets (HH) are working to create healthier school (advocates for PE, recess, walk to school days, food tastings, and eating healthier)
2	HH training through project LEAN
3	HH Youth Advocate Club presented at CAHPERD State Conference (March 2010)
4	HH youth supervision/play coaches conducted during Peace Leader and PAXIS days
5	HH began with 8 th graders expanded to include 7 th graders

Soils to Succulent Flavors

1	School garden “Soils to Succulent Flavors” is growing and flourishing;
2	Taste tests; including information on food item being sampled
3	“Soils to Succulent Flavors” is engaging students in growing, preparing, and appreciating fresh food
4	Students are composting cafeteria waste for garden fertilizer

Cafeteria

1	Cafeteria ordering enough produce to add tastings items to salad bar
2	Food service worker escorts student back to salad bar to chose additional item (as required)
3	Cafeteria has ample food prep area and counter space
4	Nutrition posters in cafeteria promoting healthier options

Physical Education and Physical Activity

1	Messages promoting physical activity found around campus
2	Variety of playground options implemented, games painted on blacktop surface
3	Classroom PE/recess equipment purchased with grant funds available for checkout
4	Walk to school days piloted
5	School area to park bikes available

Existing *Challenges* or Key Informant Perceived Barriers to Overcome:

For the purposes of this interview asterisk (*) indicates that at least 3 of the 6 key informants felt the associated area had room for improvement.

School Administration Policy/Community Enhancement and Engagement

1	Wellness Council sustainability*
2	Parent and community involvement on WC*
3	Teacher/staff participation on WC*
4	Teacher/staff role modeling in staff lounge (particularly with food items being consumed at lunch)

5	Some signs still present (branding) in violation of wellness policy
6	Consistent and stronger messages on campus through role modeling on living healthy
7	Using non-food rewards in place of food*
8	Policies need to be more visible (yet grant successes are posted in clear view in cafeteria)
9	School Board reviewing and updating policies (1/26/10) but WC wasn't aware of meeting
10	Better future communication with School Board
11	Better buy-in from teachers on value of PE and HH concept*
12	Students are bused to school (major problems with walkability to Lillian Larsen – lack of sidewalks, cross walks, and safe rail road crossings)
13	Little room to walk to school, difficult to cross the streets, hard to follow safety rules, drivers on Mission Street frequently speed faster than the speed limit
14	There is no safe railroad crossing that exists for children walking to school
15	Aesthetically, the walk to school isn't becoming but the town is currently working to change that by planting trees, flowers, benches and street lights
16	Although not many, there still were some unhealthy food fundraisers*
17	Low SES prevents students from eating healthier at home

Cafeteria and Nutrition

1	Height of salad bar is limiting for younger students
2	Morning snacks (mostly from home) and quality is questioned*
3	Cafeteria pantry storage is limited*
4	Refrigeration capabilities are limited*
5	Student plate waste*
6	Food from home could be monitored/reinforce healthy options from home
7	Salad bar is being utilized (with continued future efforts of making the salad bar more attractive to students)
8	Adequate time to eat*
9	Currently the school schedule has lunch first then recess, many respondents would like to pilot recess before lunch (RBL)*
10	Student and family involvement in food offerings*
11	Offering food as reward during school hours
12	Students bringing high calorie snacks from outside school*
13	<u>All</u> school staff acting as positive role models for food/soda
14	More parental involvement in cafeteria offerings

Physical Education and Physical Activity

1	Emphasis on academics as top priority has led to “low” or “no” priority for PE
2	Find ways to encourage more teachers to implement PE in their grades but not as extended recess time
3	Upkeep of school playgrounds and fields was reportedly a challenge
4	“Walk to School” needs a parent or campus volunteer

Modified School Wellness Score Cards

Modified School Wellness Score Cards were developed by the CDC in 2005 as a means to evaluate school wellness policies. The California Project LEAN (Leaders Encouraging Activity and Nutrition) modified the score cards to better match with the California State Wellness Policy (SWP) mandates. The four SWP modules we utilized check and score various components (e.g., physical activity, nutrition, communication, and food service) as stated in the respective school wellness policy.

By completing the score cards, each school can easily identify and prioritize changes that will improve policies and programs related to student health. Again, with score cards completed by “key leaders” schools can personally tailor their own programs to meet the needs of their schools. In order to offset test-retest reliability, the “practice effect” researchers deemed it necessary to include new “key informants” in round two. This was considered important as respondents “learn” to answer the same questions from the first survey in a favorable fashion. Tables 1 through 3 illustrate results of baseline ($n=5$) and outcome measures ($n=5$) from the sample of key informants.

The significant differences of mean wellness policy outcome measures (**viz., after school wellness initiatives were implemented**) are color coded (**in yellow**). These areas are considered “problematic” where substantial key informant disagreement occurred (i.e., areas where school wellness policy improvement could occur).

Lillian Larsen

Elementary School Physical Activity and Nutrition / CDC School Health Inventory Score Cards

Module 1: School Health and Safety Policies and EnvironmentTable 1. Mean Baseline (*n*=5) and Outcome (*n*=5) Measures for School Health and Safety Policies and Environment

Policy	Fully in Place 3.0	Partially in Place 2.0	Under Development 1.0	Not in Place 0
1. Written school nutrition & physical activity policies	2.8	2.4		
2. Restrict access to foods & beverages of minimal nutritional value	2.8/ 2.8			
3. Restrict access to other foods that do not meet SB 12 requirements	2.9/ 2.6			
4. Communicate school policies to students, parents, staff and visitors	2.6	2.3		
5. Representative school health committee	2.9/ 2.6			
6. Recess	2.8	2.0		
7. Access to physical activity facilities		2.5/ 2.0		
8. Adequate physical activity facilities	3.0	2.3		
9. Prohibit using food as reward or punishment		2.3/ 1.6		
10. Fundraising efforts supportive of healthy eating		2.4/ 2.0		

Group 1 (*n*=5) March – May 2009 baseline measures (average): Standard fontGroup 2 (*n*=5) March – May 2010 outcome measures (average): **Bold font**

Lillian Larsen

Elementary School Physical Activity and Nutrition

CDC School Health Inventory Score Cards

Module 3: Physical Education and Other Physical Activity ProgramsTable 2: Mean Baseline (n=5) and Outcome (n=5) for Physical Education and Other PA Programs

Policy	Fully in Place 3.0	Partially in Place 2.0	Under Development 1.0	Not in Place 0
1. 200 minutes of physical education every 10 days		2.5	1.4	
2. Sequential physical education curriculum consistent with standards: (only 3 rd , 7 th , & 8 th grade)		2.4/ 2.2		
3. Students active at least 50 percent of class time	2.8		1.3	
4. Adequate teacher/student ratio	2.8	2.3		
5. Teachers avoid practices that result in student inactivity		2.4/ 1.6		
6. Physical education is enjoyable	2.8	1.6		
7. Promote community physical activities		2.5/ 2		
8. Instruction for special health care needs	2.6	2.0		
9. Credentialed physical education teachers	2.6		1.4	
10. Professional development for teachers		2.4/ 1.6		
11. Participation in extracurricular physical activity programs	2.7	1.8		
12. Community access to school facilities		2.5/ 1.8		

Group 1 (n=5) March – May 2009 baseline measures (average): Standard font

Group 2 (n=5) March – May 2010 outcome measures (average): **Bold font**

Lillian Larsen

Elementary School Physical Activity and Nutrition

CDC School Health Inventory Score Cards

Module 4: Nutrition ServicesTable 3: Mean Baseline (n=5) and Outcome Measures (n=5) for Nutrition Services

Policy	Fully in Place 3.0	Partially in Place 2.0	Under Development 1.0	Not in Place 0
1. Snack/a la carte and beverage offerings inside and outside cafeteria offer appealing accessible, affordable foods that meet the requirements of: SB 12 and SB 965	2.8		1.5	
2. Promote healthy food and beverage choices	2.6	1.8		
3. Student and family involvement in the food offerings at school		2.5		0.8
4. Breakfast and lunch programs	2.7/ 2.8			
5. Low-fat and non-fat milk available	3/ 3			
6. Meals include appealing, low-fat items	2.8/ 2.8			
7. Food purchasing and preparation reduces fat	2.7	2.2		
8. Adequate time to eat school meals		2.1/ 1.6		
9. Clean, safe, pleasant cafeteria	2.8	2.2		

Group 1 (n=5) March – May 2009 baseline measures (average): Standard font

Group 2 (n=5) March – May 2010 outcome measures (average): **Bold font**

Physical Activity Assessment Results

Mode of Transportation to School

Walkability continues to be a challenge at Lillian Larsen due to lack of sidewalks, cross walks and safe railroad crossings. Moreover, the resources necessary to make physical changes are not currently within the school district's budget. Therefore, transportation to and from school was not targeted as a primary objective for intervention and was not reevaluated during the second half of this grant period.

Physical Activity at Recess

On April 22, 2010, a team of six researchers observed students engaged in physical activity during recess for children in all grade levels (Kindergarten through 6th grade). Researchers collected data on both 'overweight^{*}' and 'normal weight' male and female children, during the following recess periods:

- 1st – 3rd grade morning recess (10:00-10:15am)
- 4th – 6th grade morning recess (10:15-10:30am)
- K-1st grade lunch recess
- 2nd-3rd grade lunch recess

A total of 20 children were observed during the morning and lunch recess periods; an overweight male, overweight female, a normal weight male and a normal weight female during each recess (with an extra normal weight male and female for each of the morning recess periods; as two of the researchers were only available for data collection in the morning). Each researcher chose one child to observe for the entire recess period, making certain the child was unaware of observation. After choosing a child to fulfill the assigned 'weight' category, researchers confirmed the choice of student with each other to decrease any subjective bias that may be present. Each 15 seconds, researchers recorded the intensity of the child's activity (none, easy, moderate or vigorous) and their level of social engagement (socially engaged or alone).

For the purposes of this study, intensity was derived by observation, where each category was defined as engaging in activities requiring the following actions: 'No Physical Activity' was defined as standing still or sitting, 'Easy Activity' as walking, 'Moderate Activity' as jogging and/or jumping and 'Vigorous Activity' as running.

It had been recommended that the schools' physical activity programs include moderate/vigorous activity for a minimum goal of 50% (and preferably 80%) of class time. The figures below illustrate the results of direct observation and physical activity during recess. Detailed tables for these figures may be found in *Attachment F*.

* *Pediatric overweight* is defined as a body mass index (BMI = weight in kg/height in m²) greater than or equal to the 95th percentile (using age and sex adjusted growth charts for children) (CDC, 2007). Researchers visually identified students who fit into this category, agreeing on the subject as a group before collecting data for each particular recess or PE period.

Figure 1

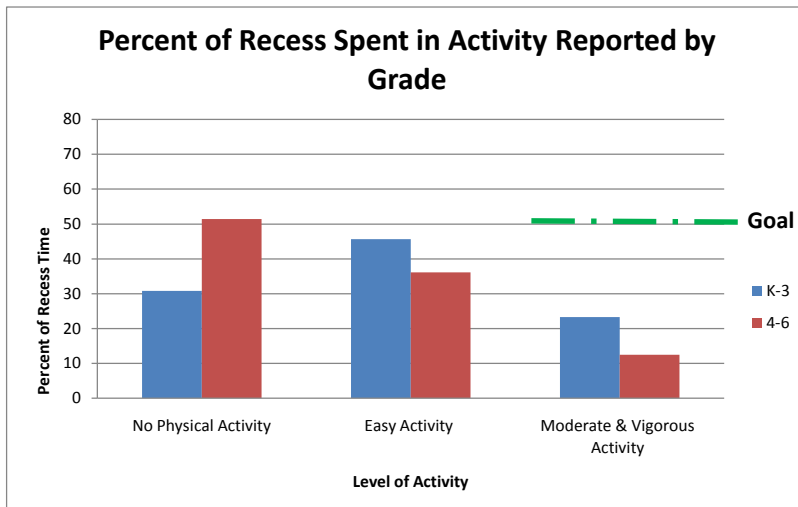


Figure 2

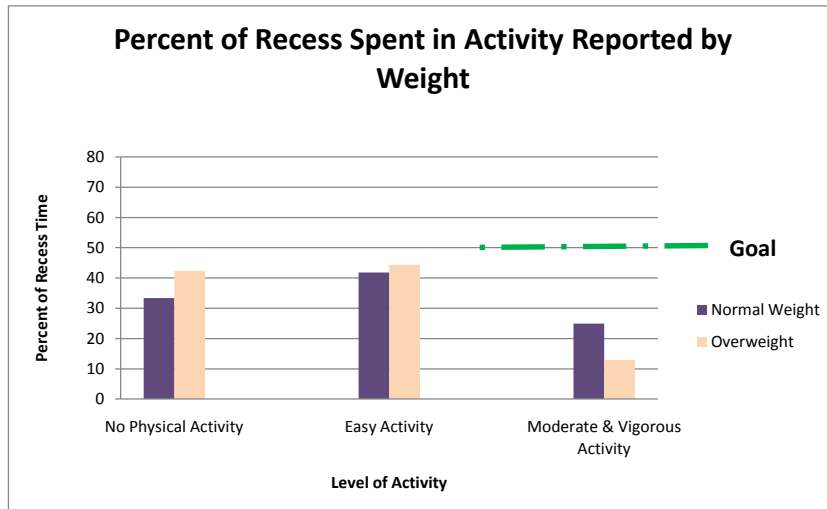


Figure 3

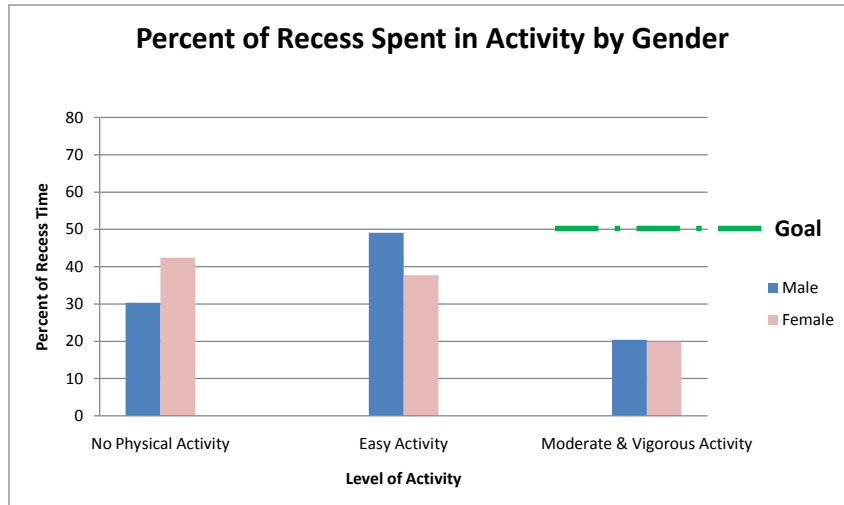
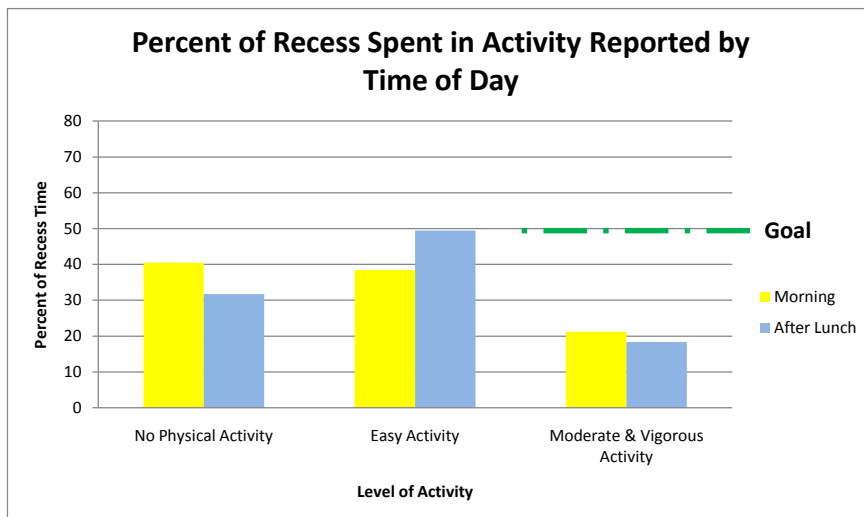


Figure 4



Observations & Recommendations

Physical Activity at Recess

As shown by Figure 1, as children get older, the amount of time engaged in ‘vigorous’ physical activity decreases. Also, in all grade levels, overweight students and female students tended to spend less time engaged in ‘vigorous’ activities.

The majority of students engaged in some sort of ‘free play’ during recess. There seemed to be an adequate choice of activities. However, students spent a lot of time standing in line, waiting for their turn. This was especially prevalent in tetherball and four-square. A simple solution to eliminating lines during tetherball and four-square would be to provide more than one tetherball and encourage children to start more than one game of four-square.

Compared to the results last year (spring 2009), of all those observed, students spent less time doing no physical activity during recess, and increased the time engaged in easy activity. For normal weight students, the amount of time spent doing no physical activity during recess decreased (with an increase in easy, moderate, and vigorous activity), whereas the overweight students spent more time doing no physical activity, and less time engaged in moderate intensity activities. Both male and female students decreased the time spent doing no activity during recess, with the biggest difference being an increase in moderate intensity activities for both genders. Students observed during the morning recess periods spent much less time sitting around than last year. They instead engaged in more easy activity. However, moderate activity was lower during both morning and lunch recess periods.

Physical Activity during PE

On April 22, 2010 a team of four researchers observed two different physical education (PE) classes; a 7th grade class and a 8th grade class. The same protocol that was used for recess was used during this observation. Eight students were observed in each 7th and 8th grade PE periods.

As shown by Figure 5, over half of the time in each PE class was spent doing no activity at all. No goal should be shown. This does not include the time spent changing into gym clothes and moving to the field. However, as both classes were doing fitness testing (1 mile run) on the day of observation, the protocol of the testing may differ from a ‘normal’ PE class. Students were paired into groups of two, one of which ran the mile run while the other sat in the bleachers and recorded their partner’s lap times. At the end of the mile run, students measured and recorded their heart rate.

It was great to see that a suggestion from the report last year (that choosing activities that encourage continuous movement, such as soccer, running, etc., may be more beneficial to students, especially in a large class) had been implemented. The PE teacher did a wonderful job explaining the types of activities she does with her classes, including the assessment rubrics used to evaluate students.

As compared to the middle school PE classes observed last year (spring 2009), the amount of time engaged in no activity decreased in both classes. The time that was spent stationary can be attributed to the time spent sitting on the bleachers watching partners run. There was a large increase in moderate intensity activity, which may be linked to the time spent jogging during the one-mile run and a difference in the temperature of the day compared to last year’s extremely hot day.

Figure 5

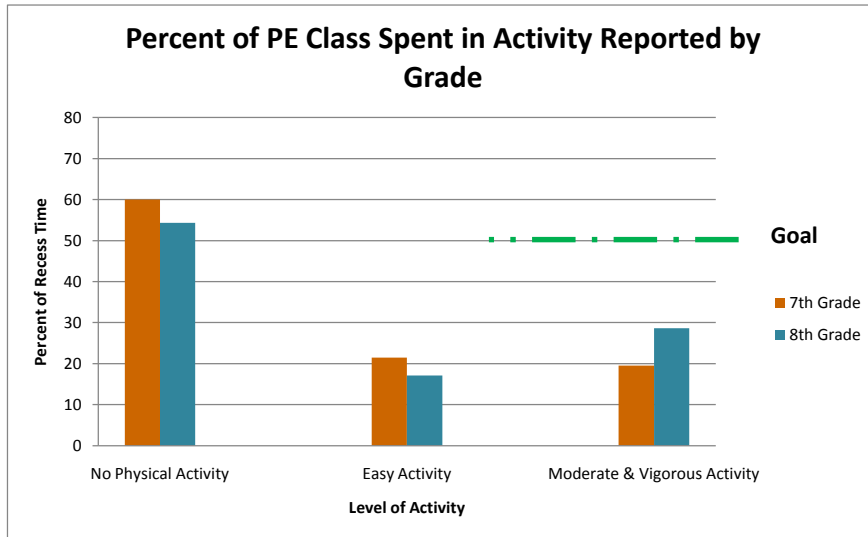


Plate Waste Study Results

Plate waste data was collected using the same methodology reported in the 2009 *Evaluation of School Wellness Policies in North San Luis Obispo County*. Data was collected on 3 non-consecutive days between April 13, 2010 and May 11, 2010. Dates were selected based on the availability of the research assistants and convenience for the school administration and foodservice staff. Aggregate plate waste compares total weight of a served meal component with the weight of that component that is discarded by students at the end of the meal. Findings are listed immediately below.

Figure 6

Percentage of **breakfast foods** served at Lillian Larsen Elementary School discarded in the trash by students on Tuesday May 4, Friday May 7 and Tuesday May 11.

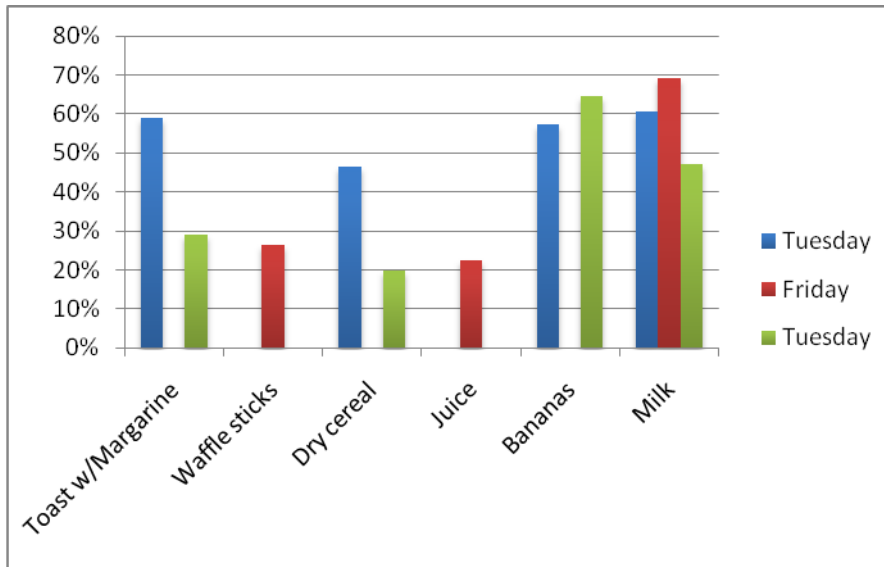
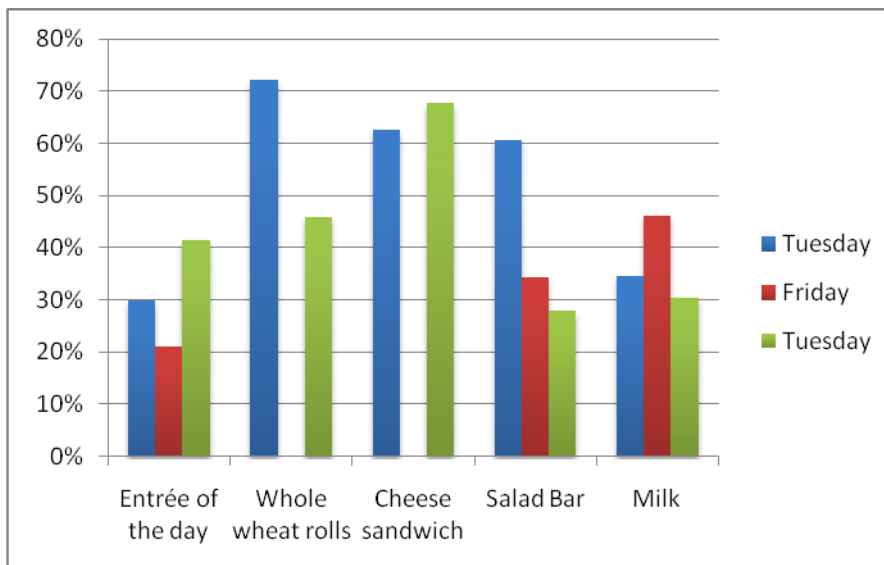


Figure 7

Percentage of **lunch foods** served at Lillian Larsen Elementary School discarded in the trash by students on Tuesday May 4, Friday May 7 and Tuesday May 11.



Lillian Larsen Elementary School plate waste comparison – Baseline 2009 and follow up 2010

Meal	Food or Beverage	Total served Weight in lbs	Plate waste Weight in lbs	2009 Plate Waste	Days sampled	Total served Weight in lbs	Plate waste Weight in lbs	2010 Plate Waste	Days sampled	2010 Recess before lunch 1-day pilot sample
Breakfast	Egg entree	4.8	3.8	78.1%	1				0	
	Breakfast bread	34.6	10.7	30.8%	3	26.9	8.5	31.6%	3	
	Cereal				0	11.9	3.9	32.9%	2	
	Fruit (bananas)					33.4	20.3	60.7%	2	
Lunch	Juice	55.8	12.0	21.4%	3	27.3	6.1	22.4%	1	
	Milk	102.5	46.1	44.9%	3	145.1	83.4	57.4%	3	
	Entrée of the day	172.7	30.3	17.6%	3	243.8	73.1	30.0%	3	6.2%
	Dinner rolls				0	23.8	14.2	59.6%	2	
	Salad Bar	176.4	77.2	43.7%	3	217.5	90.2	41.5%	3	
	Milk	280.5	77.9	27.8%	3	355.5	127.0	35.7%	3	14.3%
	Fresh fruit (apples) subgroup of salad bar				0	42.7	39.5	92.6%	1	46.0%
	Totals	827.3	257.7	31.2%	0	1127.7	466.1	41.3%		16.3%

*33% is standard waste attributable to banana peel

** 10% is standard waste attributable to apple core (Lynch, 2008)

Discussion

Data on the 2009/2010 plate waste comparison charts does not indicate improvement in total plate waste at Lillian Larsen Elementary School. In fact, total plate waste as a percentage of food served, was greater in 2010 than it was in 2009.

Qualitative findings reported by research assistants are similar to 2009:

- Whole fruit (except bananas) is frequently discarded with only one or two bites taken.
- Chocolate milk and 1% milk are selected by students much more often than non-fat milk.
- Milk cartons are frequently discarded unopened.
- When sandwiches are served, crusts are seldom consumed.
- Few students take leafy greens or lettuce from the salad bar.
- Waste appears to be greater among students from lower grades.

The number one recommendation following the 2009 plate waste data reporting was to pilot a “recess-before-lunch” shedule. Thanks to Mrs. Learned, a third-grade teacher, this recommendation was adopted for a short term pilot in two classes, that ran from the end of spring break until the end of the school year—about nine weeks. The plate waste team learned of this pilot late in the plate waste collection process so an additional one-day sample of Mrs. Learned’s 3rd grade class was completed on May 28, 2010. The class had been following a “recess-before-lunch” schedule since returning from spring break (approximately seven weeks). It was not feasible to separate and weigh all of the salad bar components for this one-class sample, so plate waste was measured only for the entrée, fresh fruit and milk and is summarized in the tables below and on the previous page.

Mrs. Learned's 3rd grade (n=25)			
Recess before lunch pilot	Total served	Plate Waste	Percent waste
May 28, 2010 - Friday	Weight in lbs	Weight in lbs	
Pepperoni or cheese round	7.3	0.5	6.2%
Fresh Apples	3.2	1.5	46.0%
Milk	10.5	1.5	14.3%
Totals	20.9	3.4	16.3%

Even this limited pilot data seems to provide evidence that supports expanding the “recess-before-lunch” schedule to include all classes at Lillian Larsen. The following personal email communication with Mrs. Learned took place just before plate waste data was collected and after the “recess-before-lunch” schedule had been in place about 6 weeks on May 25, 2010. Mrs. Learned’s responses are transcribed exactly as originally written.

Email Interview with Mrs. Learned:

AGH: Why did you start this trial of recess before lunch?

LL: Why we started it was because from the research and other school experiences that have been related to us by our Physical Education Specialist it was something worth looking into. The schools that have done it successfully had their food waste lessen and their students were more focused in the afternoon because they had had the chance to run and play and then eat and not just rush their eating to go out and play.

We were hoping that all the primary grades would be the pilot after spring break but there were just too many obstacles to overcome, i.e. yard duty people, change in the lunch schedule to name just a couple that I volunteered to do it with my class so that we would have some data to share with the school district prior to implementing it school wide next fall.

AGH: How have the children accepted recess before lunch?

LL: The kids love it before lunch and I think there are a couple of reasons for that. Right now we are the only class out there so all the space is "ours". Also we take out our own equipment so there is always something to "play" with. They also are eating much better. Just from my very non-scientific observations there is a lot less waste with my class than with the general population who are not having recess before lunch.

AGH: Have there been any complaints of hunger during recess or other challenges?

LL: The only real challenge I have found is being sure that they use the restroom before we come back otherwise we are constantly in the need of using the restroom all afternoon. No real hunger issues that I have been made aware of.

AGH: Do foods and beverages appear to be consumed more completely?

LL: Looking at your statistics [school-wide] I would say just in "general" that the waste is a lot less than the percentages listed. The item I see wasted the most is the milk. The kids just do not drink it.

AGH: Any observations about behavior in the classroom after the lunch period compared to after recess?

LL: With this particular class behavior in general is an issue. We have some students who feel it is either not important to do their work or to behave or both. I haven't seen a great improvement in behavior after lunch but I also haven't seen a deterioration of behavior after lunch. I just see things as far as behavior about the same whether we have recess before lunch or after.

AGH: Do you recommend continuing recess before lunch in your class and/or extending to other classes?

LL: One reason that I am piloting this recess before lunch is so that we can create the schedules for aides, lunch etc. for next year over the summer so that we can go school wide in the fall.

AGH: What are the administrative or school policy issues related to a change to recess before lunch?

LL: We have the "blessing" from our current administrator to go forward with recess before lunch next year. What our main goal will be is to do the scheduling over the summer for aides so that we have the support on the playground and in the lunchroom when needed and the number of kids in the cafeteria is not more than they can handle at one time. It can be done we just need to start the year that way instead of trying to implement something after the year has already started.

Laura Learned's initiative and interest in improving wellness among children at Lillian Larsen Elementary School are significant factors in the success of the "recess-before-lunch" pilot. Recess before lunch is not the norm. Only 10.4% of schools that include recess periods schedule recess before the lunch according to a 2006 study.^{vii}

Emphasis on recess before lunch and reducing plate waste in elementary schools is not inconsistent with concerns about childhood obesity and wellness. The focus is on improving consumption of foods that meet the U.S. Dietary Guidelines and National School Lunch Program goals of providing 1/3 of the USRDA for calories, protein, vitamins and minerals for the age group served. Waste from planned meals represents nutrients that children don't consume and costs of food, labor and supplies.

The importance of adequate nutrition and relationship to learning, attentiveness and classroom

discipline is well documented among all children but is especially important among low income children who might not have a breakfast or lunch at all or at least not a meal that provides 1/4 to 1/3 of the RDA for calories, protein, vitamins and minerals as prescribed by the National School Breakfast or Lunch Programs.^{viii}

Recommendation

Based on the support to develop a recess before lunch schedule for the 2010 – 2011 academic year and considering the experience of Mrs. Learned's 3rd grade class the *NFSMI Best Practice Checklist for School Nutrition Professionals Implementing or Assessing Recess Before Lunch in Elementary Schools* is recommended as a resource. This guide was developed by "...an expert panel of school nutrition directors, principals, and state agency personnel representing four USDA regions."^{ix} This and other related resources have been provided to Mrs. Learned along with the pilot plate waste data for her class. It is recommended that plate waste be measured for at least a three-day sample in the fall and in the spring to provide early and follow-up data after implementation of "recess-before-lunch" school-wide in the fall.

Scheduling recess before lunch is important but not the only method for improving intake of healthy, nutrient dense meals for elementary school children. Continued work to improve menu plans that include a variety of foods that meet the U.S. Dietary Guidelines and also appeal to children is essential. This process can be enhanced through campus and external programs to repeatedly expose children to fruits, vegetables, whole grains and low fat dairy products in ways that are engaging and fun. Acceptance of whole fruit such as apples, oranges and pears was low. Cutting fruit into wedges or sections has been demonstrated by research to be a successful strategy to increase consumption, but it does present quality challenges related to discoloration and is time consuming to do onsite or expensive to purchase already prepared. However, investigation of strategies adopted by other successful schools regarding how to best serve fresh fruit for acceptance by students would be worthwhile. Inclusion of adults who eat with children and model healthy eating and meal-time conversation might also be beneficial.

Portion-size requirements of the National School Lunch Program (NSLP) are smaller for Kindergarten through third grade students than for fourth through twelfth grade students. However, the elementary environment may include kindergarten through sixth or eighth grade. It is not uncommon for program directors to serve the larger portions to all students to simplify portioning and allow for the use of pre-portioned or ready-to-serve items. By age four, we know that children are influenced by the portion size placed in front of them. This can contribute to overconsumption or increased waste in the lower grades. Exploration of NSLP best practices used to manage these challenges is also recommended. We realize that often best practices for the health of children add to the workload of the adults that serve them; however we must keep mindful of our mission – an environment that promotes healthy children and the best learning environment.

Attachment A – School Wellness Policy (SWP) Rationale

The Federal Child Nutrition and WIC Reauthorization Act of 2004 included a new requirement that all school districts participating in the U.S. Department of Agriculture subsidized meals program, authorized by the Richard B. Russell National School Lunch Act or the Child Nutrition Act of 1966 must establish a school wellness policy for improving student nutrition and physical activity by July 1, 2006 (Public Law 108-265). This new federal policy was intended to prompt schools nationwide to develop comprehensive initiatives to promote healthful nutrition and physical activity programs and policies.

This legislation also placed the responsibility of developing a wellness policy at the local level, so that the individual needs of each district can be addressed through appropriate measures. According to the requirements for the Local Wellness Policy, school districts must set goals for nutrition education, physical activity, campus food provision, and other school-based activities designed to promote student wellness. Additionally, districts are required to involve a broad group of individuals (i.e., public health department, HEAL-SLO, Cal Poly STRIDE, school board members, school administrators, etc.) in policy development and to have a plan for measuring policy implementation.

The San Miguel Joint Union Board drafted a formal wellness policy on April 4, 2006. Arguably, schools cannot achieve their primary mission of education if students and staff are not physically, mentally and socially healthy. The underlying belief is that all schools (regardless of level) should provide a campus-wide environment where students are taught healthy eating and physical activity knowledge, skills and values. In addition, an effective school wellness policy should include the built environment of the campus which would provide ample opportunity to practice these skills on a daily basis.

Attachment B – Heal SLO/TCE Purpose and Goals

The purpose of the grant was to engage in school wellness policy advocacy and community activities to combat the growing epidemic of childhood obesity among the county’s high risk populations. In 2008, the public health department engaged the County Office of Education (COE), by focusing on pilot programs in Oceano supported by the Boys and Girls Club (B&G) and in San Miguel support was provided by the San Miguel Resource Connection (SMRC). A list of activities and objectives were drafted by the grant committee consisting of the different agencies. A list of activities and objectives are listed in the next “Benchmark” section.

HEAL-SLO/TCE Goals and Benchmarks

- **Capacity Building**
 - Attend at least 2 statewide/regional activities
 - Develop at least 2 new revenue sources
- **Community Engagement**
 - Conduct advocacy training with at least 25 new parents/teen leaders
 - Engage other parent/community organizations on the need for childhood obesity policies and programs
 - Establish supportive collaborative for school wellness councils (SWC) and recruit school wellness council members
 - Provide resources, technical assistance/support, and training as appropriate to the school wellness councils
- **Assessment**
 - Facilitate a review of environmental supports/barriers and provide technical assistance/support for assessments
 - Conduct walkability and food availability assessments, student physical activity and nutrition analysis
 - Compile assessment findings in a report for each school district
 - Conduct at least 4 teen presentations on assessment findings to policy makers
- **Policy Development and Advocacy**
 - Research other school wellness policies and develop comprehensive resources for the school wellness council
 - Research recent California school wellness legislation; develop reference sheet for school wellness council
 - Convene each school wellness councils for policy development and revision meetings
 - Facilitate school wellness advocacy for school board member approval of school wellness programs
 - Implement programs to demonstrate sustainable, long-term solutions to obesity prevention in schools
- **Implementation Monitoring and Peer Learning**
 - Develop measures and collect data to assess TCE/HEAL-SLO activities
 - Conduct follow-up survey of attitudes/knowledge of local policymakers on the environmental and policy influences of obesity prevention
 - Review school wellness policy process and outcome evaluations/program implementation with school wellness councils
 - Present challenges/successes to school board in at least 2 meetings
 - Disseminate executive summaries of evaluation findings
 - Coordinate youth leaders to present highlights in year 2 at a county-wide meeting of all school district superintendents and COE superintendent

Attachment C – Additional Childhood Obesity Information, Studies and Links

Childhood overweight is one of the most serious problems currently affecting individual and public health.^x The prevalence of American children classified as “overweight” or “obese” has tripled in the past 20 years^{xi} and currently those numbers conservatively are known to exceed 30 percent.^{xii} Moreover, Centers for Disease Control (CDC) data showed that Mexican American children, between the ages 6-11, were 1.3 times more likely to be overweight as Non-Hispanic White Children.^{xiii} (<http://www.cdc.gov/nchs/data/hus/hus08.pdf>)

San Luis Obispo County data also shows increasing rates of childhood overweight and obesity.^{xiv} Seventy four percent of children ages 6 to 11 in 2007 report they do not meet daily exercise requirements and 25 percent reported that they ate fast food the previous day (California Data Book, San Luis Obispo County, 2007). Physical fitness tests conducted in the 2007-2008 school year show that 19.1 percent of San Luis Obispo 5th, 7th, and 9th grade children are not in the Healthy Fitness Zone, indicating “overweight” or “obese” students.^{xv} During the same fitness testing year (2007), data showed that 33 percent of the Latino children were not in the Healthy Fitness Zone, indicating a health disparity correlating with the demographic distribution of low income families and the enrollment of Hispanic or Latino children in the north and the south portions of the county.^{xvi} In fact, recent data from UCLA shows that the poorest people are at highest heart disease risk.^{xvii}

Obesity occurs when a child consumes more calories than he or she uses. But this imbalance between calories consumed and calories used isn't merely the result of the child's behavior. It is the result of many different factors—including behavioral, environmental and genetic factors. (<http://www.cdc.gov/obesity/childhood/causes.html>). One such factor is what experts call an “obesogenic” environment. Americans live in an environment which is promoting weight gain. For instance, today the United States produces about 4200 kcals (kilocalories) per day for every man, woman and child; whereas a range of only 1500-2500 kcals is necessary for healthy weight maintenance. Things like greater food availability, a decrease in home cooking, portion distortion and decreased breakfast consumption, advertising regulations and sedentary pastimes all contributed to this change over the past thirty years.^{xviii} Our genetic makeup did not change over the past thirty years, but our environment including product marketing practices targeting children and families, certainly has changed.

Reasons for concern:

- 1. Being overweight or obese increases many health risks for children.** The CDC website points out that obese children and adolescents are at risk for health problems during their youth and as adults. For example, obese children and adolescents are more likely to have risk factors associated with cardiovascular disease (such as high blood pressure, high cholesterol, and Type 2 diabetes) than are other children and adolescents. (<http://www.cdc.gov/obesity/childhood/index.html>.) Additionally, a New England Journal of Medicine study concluded that “The prevalence of the metabolic syndrome is high among obese children and adolescents, and it increases with worsening obesity.” (<http://content.nejm.org/cgi/content/abstract/350/23/2362>)^{xix} Metabolic syndrome is a “cluster of conditions that occur together, increasing the risk of heart disease, stroke and diabetes.” While having just one of these conditions — increased blood pressure, elevated insulin levels, excess body fat around the waist or abnormal cholesterol levels — isn't diagnosed as metabolic syndrome, it still contributes to the risk of serious disease. The risk is even greater if more than one

of these conditions occur in combination.^{xx}

<http://www.mayoclinic.com/health/metabolic%20syndrome/DS00522> . Of children born in the year 2000, it is estimated that one in three will become a diabetic in their lifetime and those with diabetes will lose, on average, 10–15 years of life. This is directly related to weight, and Latinos are at greater risk than Caucasians or African Americans.

(<http://www.cdc.gov/chronicdisease/resources/publications/AAG/ddt.htm>)

2. **Childhood obesity increases the risk of obesityⁱⁿ adulthood.** Obese children and adolescents are more likely to become obese as adults.^{xxi} For example, one study found that approximately 80% of children who were overweight at ages 10–15 years were obese adults at age 25 years.^{xxii} The study also found that if overweight begins before 8 years of age, obesity in adulthood is likely to be more severe. (<http://www.cdc.gov/obesity/childhood/index.html>)^{xxiii}
3. **Obesity is starting at earlier ages, so we must take steps to prevent it sooner.** Nearly one in five U.S. four-year-olds are obese, according to a study published in the *Archives of Pediatrics and Adolescent Medicine*.^{xxiv} Yet, it's possible to prevent some negative consequences if people are informed about the problem and encouraged to make changes. Making lifestyle changes such as increased moderate/vigorous exercise and improved nutrition can even delay or derail the development of serious diseases that may result from metabolic syndrome.^{xxv}

Attachment D – Research Model and Approach

Using the Ecological Model: Five Levels of Influence

Individually-based approaches to overweight and obesity prevention and treatment are widely viewed as ineffective by themselves; because they do nothing to alter the environmental factors believed to contribute to the population-wide overeating and inadequate physical activity.^{xxvi} This study used ecological models for assessment and intervention because it takes the connections between people and their environments into consideration.^{xxvii} The focus remains on environmental factors (barriers to healthy eating and physical activity) and moves away from simply “blaming the person” for their health status.^{xxviii} Researchers and practitioners systematically assess and intervene on each of the following five levels of influence:

1. Student factors (example: individual attitude and knowledge of food, Physical Activity (PA) etc.)
2. Family factors (example: SES, family role modeling, knowledge of food etc.)
3. School/Work factors (example: built environment, water availability etc.)
4. Community factors (example: demographics, SES, walking and biking to school etc.)
5. Public Policy (example: school wellness policy, budgetary means to accomplish objectives)

Broad Research Goals

Once baseline measures were collected and analyzed; overarching program goals were established to drive stronger school wellness policy recommendations. They included:

- a. Advance policy and environmental changes that promote healthy eating and physical activity options in school.
- b. Help initiate sustainable program initiatives which would help motivate students to eat healthier and engage in more physical activity.
- c. Strive to make the “easier” or “default” choice the healthier choice.
- d. Improve the health of the staff as well as the health of the students.

Data Collection Theory:

The newly formed STRIDE research team targeted socio-ecological domains in-line with national wellness policy recommendations and theory to guide data collection and ultimately provide intervention recommendations. Domains--health behavior thought most to influence eating and physical activity—including:

1. Individual – measured actual physical activity during recess and physical education – data collection methods were direct observation using a standardized physical activity assessment instrument and photo documentary for communication clarity when presenting data.
2. Individual – measured actual amount of food consumed or thrown away – data collection method was a plate waste study. Photo documentary utilized to supplement recommendations.
3. Family – measured family involvement in food selections (school and home) – data collection method was key informant interview and modified school health index score card instrument. The photo documentary was utilized to supplement box lunch contents brought from home or purchased on the way to school; document volume and portion control, and provide clarity for presenting recommendations.

4. School – measured built environment of the physical barriers to healthy eating and physical activity -including access and promotion of healthy food options – data collection method was photo documentary, key informant interviews, and modified school health index score cards.
5. Community – measured built environment of the physical barriers to healthy eating and physical activity – data collection included: photo documentary including examples of safe routes to school and potential business or vendors near the school, and key informant interviews.
6. Policy – measured written school wellness policy – data collection method was key informant interview and modified school health index score card. Completion by key informants (N=5) specific to each school site. Specific interest areas included: identification of the barriers and successes to the school wellness policy since it was implemented in 2006.

Data Collection Methods

Data collection revolved around five measurement activities: photo documentary (built environment), direct observation (physical activity and cafeteria), key informant interview (n=5), modified elementary school health index score card (n=5), and a plate waste study. Please view the photo documentary analysis. Results and suggestions from the photo documentary analysis have been integrated with the component and overall recommendations.

Attachment E – Key Informant Interview Scripts

Baseline Data: Key Informant Interview Script (2009)

Script Introduction (Interviewer: David Hey – March through May 2009)

In 2006, a revised Student Wellness Policy was adopted and implemented at your school (provide copy of school wellness policy). We would like to ask you some questions to learn your opinions about the student wellness policy that was implemented at your school.

Let's start with the policies your *school has been working on so far*...

1.) In your opinion, what were the most important changes that happened as a result of the Student Wellness Policy being implemented at your school?

2.) What were the easiest changes to make when the Student Wellness Policy was implemented?

Interviewer prompt: Why do you think this/these changes were made so easily?

Easiest Changes (2006)

3.) What strategies were used that helped ease these changes into place?

4.) What were, or continue to be, the most difficult changes to make when the school wellness policy was implemented? Interviewer prompts? Why do you think this/these changes were so difficult?

What strategies were used to make these changes? If you had it to do again what would you do differently?

Let's talk about the policies *you have not yet changed*.

5.) What were the policies you had planned to change but have not yet been able to change?

6.) In your opinion, what were or are the barriers that keep these changes from happening at your school?

7.) What would you say are the most important next steps to take that will make this school a healthier place for students? Interviewer may prompt ... Why do you think so? Can you give me a little more detail?

8.) What would you say are the most important next steps to take that will make this school a healthier place for teachers and all school staff members?

Outcome Data: Key Informant Interview Script (2010)

Script Introduction (Interviewer: Laurie Pugh – March through April 2010)

1.) What were the biggest health and wellness milestones this year?

2.) What were the biggest health and wellness disappointments?

3.) Were there any pivotal times this year when there was stability of a particular intervention? (If so, what were the circumstances?)

4.) There were several different health and wellness activities and events to be implemented this past year. Do you think you could list all of these health and wellness activities and events?

Name all the activities that come to mind?

5.) Okay so now you told me about several interventions (some that worked- and some that didn't work). Of those that did work, why did they, and what funding and what staffing are being used to keep the sustainable interventions in place?

6.) Tell me about the health and wellness interventions that didn't work (if applicable). (Why do you think this was the case?)

7.) Were there any inputs or concerns from the parents? (If so, please elaborate).

8.) If you had unlimited support and funding to try one health and wellness initiative that you tried over the course of the year, (or one you didn't) what would it be?

9.) What word would describe your personal overall feeling of the program experience this past year?

Attachment F – Physical Activity Assessment Tables

Results of Direct Observation of Physical Activity during Recess at Lillian Larsen School:

Figure 1: Social Engagement & Level of Physical Activity during Recess (n=20)

Grade Level	Socially Engaged	Alone	No Physical Activity	‘Easy’ Activity	‘Moderate’ Activity	‘Vigorous’ Activity
K-3	88.7%	11.3%	30.8%	45.7%	18.6%	4.7%
4-6	92.1%	7.9%	51.4%	36.1%	9.7%	2.8%
OVERALL	89.7%	10.3%	37.0%	42.8%	15.9%	4.1%

Figure 2: Social Engagement & Level of Physical Activity for Normal Weight vs. Overweight for K-6th Grade Students (n=20)

Weight Status	Socially Engaged	Alone	No Physical Activity	‘Easy’ Activity	‘Moderate’ Activity	‘Vigorous’ Activity
Normal Weight	89.4%	10.6%	33.4%	41.8%	19.2%	5.7%
Overweight	90.2%	9.8%	42.4%	44.4%	11.1%	1.8%

Figure 3: Social Engagement & Level of Physical Activity for Male vs. Female K-6th Grade Students (n=20)

Weight Status	Socially Engaged	Alone	No Physical Activity	‘Easy’ Activity	‘Moderate’ Activity	‘Vigorous’ Activity
Male	93.5%	6.5%	30.3%	49.1%	14.1%	6.3%
Female	86.6%	13.4%	42.4%	37.7%	17.5%	2.4%

Figure 4: Effect of Time of Day on Social Engagement & Level of Physical Activity for K-6th Grade Students

Time of Day for Recess	Socially Engaged	Alone	No Physical Activity	‘Easy’ Activity	‘Moderate’ Activity	‘Vigorous’ Activity
Morning	92.1%	7.9%	40.5%	38.4%	16.0%	5.2%
Lunch	86.2%	13.8%	31.7%	49.5%	15.9%	2.5%

Results of Direct Observation of Physical Activity during PE Class at Lillian Larsen School:

Figure 5: Social Engagement & Level of Physical Activity during PE Class (n=16)

PE Class	Socially Engaged	Alone	No Physical Activity	‘Easy’ Activity	‘Moderate’ Activity	‘Vigorous’ Activity
7 th Grade	62.5%	38.5%	60.0%	21.5%	16.5%	3.0%
8 th Grade	63.5%	36.2%	54.3%	17.1%	25.9%	2.7%
TOTAL	63.0%	37.3%	57.1%	19.3%	21.2%	2.9%

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