

Network Schools – Creating Places for Healthy Students and Families

California has made tremendous strides in reaching low income residents with information and skill building opportunities as well as changing the context in which people make food and activity choices. Through the *Network for a Healthy California (Network)*, schools have been at the forefront of the movement for healthy change, and as institutions that are often at the heart of low income communities, schools are ready to further embrace the comprehensive, multi-sector strategies made possible by recent changes to federal funding. With their singular ability to reach families, schools will be vital partners as the *Network* transitions from SNAP-Ed (Supplemental Nutrition Assistance Program Nutrition Education) to NEOP (Nutrition Education and Obesity Prevention Grant Program).

In an effort to understand the potential role for schools in the new *Network* as well as how *Network*-funded school-based projects have contributed to California's healthy eating and active living movement, the California Association of Nutrition & Activity Programs (CAN-Act), supported by *Network* funding, undertook a literature review and interviews with the directors of these projects. The following pages describe what we found in the literature and what the interviews uncovered.

Review of the Literature: Effectiveness of School-Based Nutrition Education Interventions

As poor nutrition, obesity and diet-related chronic diseases continue to cause widespread concern, the search continues for school nutrition education and activity promotion approaches that combine effectiveness and economic sustainability. This review of the literature therefore sought to address:

1. Effectiveness of public school-based nutrition education interventions in improving students' eating and/or activity behaviors, anthropometrics, and/or metabolic correlates alone or with a physical activity component
2. Effectiveness of interventions to create healthier school food and physical activity environments
3. Effectiveness of school-based social marketing interventions
4. Cost-effectiveness of nutrition education and/or environmental and policy changes to promote healthier eating and activity levels

We conducted a literature search using PubMed, collecting journal articles from 1995 to the present. We also consulted several reports issued by public agencies, nonprofits, other academic institutions, and private consultants. We reviewed twenty-two articles, published between 1996 and 2011, that assessed the effectiveness of nutrition education in schools. Thirteen articles from this period addressed the effectiveness of school environmental and policy changes; eight articles published between 2005 and 2011 considered the effectiveness of social marketing

in public schools; and four articles published between 2006 and 2010 assessed cost-effectiveness of nutrition education and/or environmental and policy changes in schools.

Effectiveness of Multi-Component Interventions

Journal articles we reviewed suggested that school-based nutrition education interventions, particularly multi-component interventions, hold considerable promise for improving school children's diets and related health outcomes. The elements that contributed to greater effectiveness were longer duration, frequent, low intensity doses, hands-on activities, and multiple components (e.g. garden activities or physical activity combined with nutrition lessons rather than nutrition lessons alone). The literature also suggested that shorter doses (e.g. under an hour), and reduced intensity (e.g. frequency being weekly rather than daily) contributed to effectiveness.

Measures of effectiveness included positive changes in nutrition knowledge, self-reported and externally measured consumption behaviors, anthropometric/metabolic markers, and fitness or physical activity level. None, however, found positive changes in statements of intent to consume more fruits and vegetables.

Some of the specific findings include:

- A review of 15 interventions in 3 countries: 14 of the 15 involved a classroom component; 10 reported significant effects, ranging from an additional 0.3 to 0.99 servings per day and none noted decreased produce consumption; multi-

component interventions exhibited the greatest positive effects. (Knai et al., 2005.)

- A meta-analysis of multiple articles reporting on interventions to address childhood obesity: authors found convincing evidence that school-based interventions are effective, at least short-term, in reducing the prevalence of childhood obesity. Longer-running programs were more effective than shorter programs. (Gonzalez-Suarez et al., 2009)
- Analysis of results from seven school-based, 5-A-Day interventions in underserved schools: Four of the seven projects reviewed had significant results, netting an average increase of 0.4 servings of fruit and vegetables in student diets. These results were comparable with those of the larger-scale, well-controlled, and more costly 5-A-Day for Better Health efficacy trials, indicating that school-based interventions can be both feasible and effective. (Stables et al., 2005)

Effectiveness of Environmental and Policy Interventions

Eleven articles were reviewed to assess the effectiveness of such environmental and policy changes in schools as:

- Changes to the school food environment (cafeteria services, vending machines, and snack bars)
- Multi-component nutrition interventions (modified school food/activity environments or policies plus one or several of the following: classroom component, physical activity component, garden-based learning, social marketing, food tasting and/or demonstrations, etc.)
- Modifications of school physical activity environments or programming

One review of more than 20 studies related to nutrient poor, energy dense “competitive foods” (e.g. those sold outside the USDA supported school lunch program) reported some important findings with respect to school food environments and student health and consumption behaviors:

- Stricter standards for competitive foods led to positive changes in anthropometric and/or metabolic markers, as well as positive changes in externally measured consumption behaviors.
- Limiting/eliminating the sale of competitive foods and/or snacks generated positive changes in *both* self-reported and externally measured consumption behaviors.
- Schools without stores, snack bars, à la carte items or pouring rights contracts had associated positive changes in externally measured consumption behaviors.

Additionally, the literature indicates that policies limiting the availability of competitive foods and beverages, including SSBs, can improve students’ eating habits and health indicators significantly without hurting school revenues. Applying nutrition standards to such items can also help, whether it leads to healthier eating from among qualified competitive foods or to students’ gravitation toward USDA school meals.

Effectiveness of Social Marketing in Schools

Social marketing applies commercial marketing technologies to behavior modification initiatives aimed at improving personal and societal welfare. Eight articles were reviewed, covering such interventions as:

- School media campaigns
- Multi-component nutrition and/or activity interventions (see “Effectiveness of Environmental and Policy Interventions,” above)
- Campaigns initiated in the school environment by outside entities (sports teams, etc.)

Findings from the articles reviewed included the following:

- No articles found positive changes in either statements of intent to consume more fruits and vegetables or in externally measured consumption behaviors.
- One article found positive changes in self-reported consumption behaviors, and another found positive changes in anthropometric/metabolic markers; however, the direct effect of social marketing was difficult to extricate from those of nutrition education, nutrition policy, changes to environment, etc.
- Two articles found positive changes in fitness or physical activity level; such improvements derived from the same social marketing campaign (VERB) which had no other confounding components (and which reached school aged youth but was not expressly implemented in schools.)

The evidence of the impact of social marketing on encouraging students in healthier eating and/or in weight control appears inconclusive, though it may be a useful part of a multi-component strategy.

Cost Effectiveness of Nutrition Interventions

There is little in the literature with respect to cost-effectiveness of the types of interventions (nutrition education and environmental and policy change), thus our review includes just four articles primarily evaluating the cost effectiveness of EFNEP.

Although limited, current literature does indicate that nutrition education interventions are potentially cost-

effective if carefully planned, multicomponent, and of sufficient duration; EFNEP, for example, is deemed a worthy investment of federal tax dollars. Environmental and policy modifications are also cost-effective, but need considerable time to implement. (Full review and bibliography available at www.can-act.net).

Promising Results from California School-Based Network Projects

Beyond an understanding of what is reported in the literature with respect to the effectiveness of nutrition and physical activity interventions conducted in schools, we wished to better understand the reach and impact of *Network for a Healthy California*-funded school-based interventions. To this end, a workgroup of project directors with multiple years of experience working in school-based programs developed an interview protocol for collecting information from districts currently participating in the *Network* (see Appendix 2 for the complete interview protocol). For the purposes of this brief, “school-based” includes projects that are housed in school districts, county offices of education, and colleges and universities.

The purpose of the interviews was to ascertain 1) whether collateral environmental and policy changes occurred at the school sites as a result of the *Network* program being in operation, and 2) the extent to which partners support and/or are involved in the school district efforts.

The interview protocol included questions to be asked as well as a rubric for creating the interview sample. The workgroup sought to interview a sample which:

- Included at least 1/3 of school-based projects participating during the 2010-2011 year,
- Included a mix of small, medium, and large projects, and
- Included proportionate representation between Northern, Central, and Southern California.

The convenience sample was established by 1) sorting the school-based projects alphabetically by area of the state and 2) enumerating the projects into three tiers, and selecting one of these tiers for interviews. Projects were excluded or substitutions made in the sample when:

- They had not been operating a *Network* program for at least three years, and/or
- Reasonable but unsuccessful attempts were made to reach the project director.

Network school-based projects were classified as having either small, medium, or large budgets in order to assess whether project budget had an impact on the extent of collateral environmental and policy changes. The convenience sample included 15 school-based

contracts; a total of 14 interviews were conducted with 10 school-based projects in the original sample and four substitutions. In each case, the project director was interviewed directly.

Figure 1: Network School District Classification

	Universe (n=49)		Sample (n=15)		Interviews (n=14)	
	No.	%	No.	%	No.	%
Northern CA	14	28.6	4	26.7	4	28.6
Central CA	10	20.4	3	20	3	21.4
Southern CA	25	51	8	53.3	7	50
Small Budget	16	32.7	6	40	5	35.7
Med. Budget	13	26.5	4	26.7	4	28.6
Large Budget	20	40.8	5	33.3	5	35.7

The types of changes that were reported by the project directors were classified into general categories:

- Changes in nutrition and/or physical activity environment
- Changes in school nutrition/physical activity policies and practices
- Nutrition education, events, messaging, and leadership development
- Anecdotal observations

Network schools – size does matter

In distilling the feedback from the interviews with directors of school-based projects, we identified 73 “outcomes” from *Network* school-based projects and categorized these outcomes as described above. Not surprisingly, school-based projects with smaller federally-funded SNAP-Ed budgets (that is, those under \$300,000 per year), accomplished approximately 57% of the identified outcomes compared with approximately 90% for those projects with federally-funded budgets over \$300,000 per year. Interestingly, those projects with larger budgets (e.g. over \$750,000 in federal funding) did not demonstrate a greater number accomplishments than those projects with mid-sized budgets of \$300,000-\$750,000 (92% and 89%, respectively). Among the factors not taken into account in this brief is the number of sites (e.g. total number of schools) each project serves. Thus it is possible that the larger projects have a higher service site to budget ratio than the medium sized projects.

The number of partnerships engaged in by projects also appeared to have a linear relationship to project size, with the smallest number of partners (3) occurring in the smallest project and the largest number of partners (22) occurring in one of the largest projects, very likely due to the greater staff and subcontracting capacity enjoyed by the larger projects. The interview methods we employed did not give us

the capacity to parse the specific contributions of partnership reach on outcome achievement.

Changing the context: making the healthy choice the easy choice

A range of changes to the nutrition environment at *Network* school sites were implemented. Some of the changes occurred at numerous sites; for example, healthy classroom celebrations (e.g. items such as cupcakes and cookies no longer allowed) were cited by ten project directors. The addition of salad bars to school cafeterias and on-campus produce stands occurred at four sites. Less frequent but still significant changes such as principal-driven guidelines regarding appropriate food from home, built environment upgrades, and “Lunch League” team activities (weekly structured, active games and nutrition education at lunch time) occurred at a few school sites.



Moving toward wellness: systems and social norms changes

The presence of *Network*-funded programs in schools resulted in a variety of changes to district or school wide practices and in the social norms that exert influence on students' and families' food and activity choices. One change that occurred in two thirds of the districts surveyed was a move from food-based school fundraisers (e.g. sales of candy, cookie dough, etc.) to non-food based fundraisers (e.g. walk-a-thons, dance-a-thons, etc.). Other system-wide changes that took place in at least four districts were changes in procurement to secure more school meal produce from local farmers, elimination of soft drinks and other low nutrient dense foods, no-candy-on-campus policies, and establishment of regular parent walking clubs and/or walk-to-school groups.



Physical activity is increasingly being recognized as an important component to child wellness and academic achievement, and changes that occurred in a number of *Network* schools reflect this through the adoption of policies of allowing staff to attend *Network* nutrition education and physical activity promotion training on paid time, increasing the number of minutes of physical activity students engage in during the day, hiring full time physical education teachers, and initiation of joint use agreements (arrangements where

cities and other organizations can utilize school facilities for physical activity programs).

Increasingly, *Network* funded staff at school-based programs are being consulted for their expertise in creating healthy places, as demonstrated by the inclusion of *Network* staff from one school district in a committee convened to develop a “wellness component” for the updated General Plan.

Beyond the classroom - nutrition education that keeps on giving

There is increasing recognition that to create widespread change in food and activity choices, people need to be reached where they live, learn, work, and play, and that nearly everyone has a role in this movement. For this reason, nutrition education takes on a variety of forms at *Network* schools.



More than a third of the schools surveyed were successful in integrating nutrition education, increased physical activity, cooking lessons, and gardening activities into affiliated after-school programs. Nearly a third surveyed had instituted parent education nights and/or workshop series' to focus on healthy eating and active living topics, several have been successful in getting access to teachers in order to integrate nutrition into the school day curriculum. Additionally, several schools surveyed instituted annual events such as nutrition focused assemblies or “nutrition olympics;” still others were able to engage students in providing leadership around healthy eating and active living through various nutrition advisory councils and youth empowerment groups.



While a recent study in *Pediatrics* found obesity rates evening out among children in some ethnic and racial groups in California, more interventions are needed to help other obese children who are at high risk for weight-related health issues. This study indicates school- and after-school-based programs have demonstrated improvements in obesity outcomes for many students, and our analysis indicates that *Network* schools in particular are contributing to a healthier California.

