

Case Study: Appleton Central Alternative Charter High School's Nutrition and Wellness Program

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This is one portion of the report, *Better Food, Better Behavior*, which examines the research associating nutrition in school meal programs and student behavior. This project is funded through a grant from the W.K. Kellogg Foundation. Advisors to this project include:

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Introduction

Appleton Central Alternative Charter High School (ACA) opened its doors in February of 1996 to give individualized attention to students struggling in the conventional school settings. Despite this close attention, students' behavioral problems continued to be extremely problematic. In an attempt to improve student behavior and academic performance, ACA began offering physical education opportunities in the fall of 1997. At that time, ACA also teamed up with a local business, Natural Ovens Bakery, to offer the students a free, nutritious breakfast. The following year (the 1998-99 school year) Natural Ovens sponsored the installation of a full kitchen and dining service (offering both breakfast and lunch). Although originally committing to sponsor and co-manage ACA's dining service for three years, Natural Ovens extended their funding and management to five years. During this time ACA and Natural Ovens developed a nutrition and wellness program. In September of 2003, ACA turned over the management of the dining services to the ARAMARK Corporation, a national food service management company. This case study gives an account of student behavior in conjunction with the implementation of the nutrition and wellness program at ACA.

Methodology

Information for this case study was gathered during two separate visits to ACA by two researchers (the second researcher replacing the first). During their visits the researchers interviewed Greg Bretthauer - the Dean of Students, toured the school, met some of the students and staff and ate ACA's lunch in the dining area. The first researcher also interviewed teachers: Mary Bruyette, Eric Eastman, and Doug Myer, social worker Deb Larson, and principal LuAnn Coenen. The second researcher also interviewed Mary Bruyette over the phone. Information found in this case study came from these interviews, literature received from Greg Bretthauer, published articles on ACA and many follow up conversations with Greg Bretthauer.

An Overview of Appleton Central Alternative Charter School

Appleton Central Alternative Charter School is located in Appleton, Wisconsin, a town with a population of 70,087¹ and home to Lawrence University. ACA opened mid-school year in February 1996 in the bottom floor of a hundred year old high school building.² Unlike many schools, the inside of ACA feels inviting and comfortable. All the floors

¹ According to the U.S. 2000 census. (<http://appleton.areaconnect.com/statistics.htm>)

² Also located in this building is a separate charter middle school: Appleton Community Learning Center. This school only takes up one room on the first floor and consists of one teacher and eight to ten students. These middle school students eat the same nutritious meals as the high school students. However, the middle school is not involved in publicizing the effects of the meal program. Located upstairs is the Wisconsin Connections Academy (WCA) virtual school. This school serves 500 students throughout Wisconsin via the internet. The basement houses both the district's technology department and the student services department.

are wooden like much of the trim decorating the building and relaxation music plays softly over the intercom. There is no trash littering the ground or graffiti defacing school property (not even in the bathroom stalls).

ACA was founded as a refuge for severely at risk students from Appleton North, East and West High Schools. Students in grades 10 through 12, whose needs are not sufficiently met at their schools' at risk programs, are referred to ACA. These students have exceptional personal needs and are characteristically credit deficient, continually disruptive in class, and/or frequently truant. Often they struggle with psychological and emotional problems and come from dysfunctional home environments. Some students struggle with issues of teen pregnancy/parenthood, drug addiction, homelessness, and trouble with the law. To assist these students, ACA employs a fulltime social worker in addition to a deeply dedicated staff.

The school provides various educational services to about one hundred twenty students. Fifty students are enrolled in each the morning and afternoon sessions, while twelve students work independently on their GED reviews. Approximately five students, who are expelled from their original schools, attend a program for expelled students held in the evening at ACA. The mission of the expelled program is to keep these students on track until they are allowed to return to their original school. There are one hundred students on ACA's waiting list.

ACA's curriculum is self-paced, individualized, and competency-based. Instruction is given in the core subject areas of communication arts, mathematics, social studies, science, and health/fitness. The instructional day is set up in two three-hour, half-day sessions: a morning (8 to 11am) and an afternoon (12 to 3pm) session. This allows students the opportunity to obtain work or volunteer credits while attending school.³

The twelve member ACA staff includes: a principal, a dean of students/work experience coordinator, a secretary, a part time police liaison officer, a social worker, two cooks (one full-time, the other part-time), an educational assistant and four teachers. With the class size limited to a maximum of thirteen students, each student is provided with extensive one-on-one attention from their teachers. Bretthauer explains that this fosters a high level of respect between the students and staff and offers students the degree of close attention they need to prosper.

For the 2002 and the 2003 calendar year the Department of Public Instruction awarded ACA a Dissemination Grant.⁴ This grant was given to ACA in recognition of the high

³ Greg Bretthauer explained that every student needs 8 elective credits to graduate in the Appleton School District. At ACA all 8 credits may be fulfilled through volunteering or work experience. Half a credit is issued after 90 hours of volunteering or work. Through out the rest of the district, students may only fulfill 2 of the 8 elective credits through volunteering and a half credit is issued only after 180 hours.

⁴ The Wisconsin Charter School Association applied for the Dissemination Grant. It was awarded to the Middleton Area School District in Madison, WI, with the understanding that they would share the grant with 5 schools. This grant allowed the schools to publicize what each school felt was their best practice. Publicity of each school's best practice was made available on the Wisconsin Charter School Association's website and printed and disseminated through out the state.

quality of ACA's best practice: caring for students' mental, emotional and physical health. ACA addresses these focus areas through:

- integrating character development and the importance of proper nutrition and healthful behavior throughout students course work;
- providing individual counseling;
- offering specialized courses that teach personal and social skills in combination with drug resistance skills and education and,
- providing a healthy school environment: offering wholesome food choices in the cafeteria and providing time and space for exercise, games and socializing.

Since the 1998-99 school year, both the morning and the afternoon sessions have included a period reserved for lunch as part of the Nutrition and Wellness Program. As a result of participating in this program, staff claim that students exhibit positive behavioral and academic changes. ACA operated a year and a half without this meal program.

The Food and Lunchroom before the Nutrition and Wellness Program

Prior to the implementation of the Nutrition and Wellness Program, ACA had no kitchen, lunchroom or tables and chairs for students to sit and eat. The only food and beverages available in the student lounge were vended items including sodas, candy bars, chips, and other snacks from vending machines⁵ in the students' lounge. Students ate from vending machines throughout the entire day, while sitting on couches, the floor or at a computer station. Sack lunches were provided to students who qualified for free and reduced lunches through the National School Lunch Program. These lunches were supplied by the food service ARAMARK Corporation, the company holding the contract for the entire Appleton Area School District⁶. Each free lunch typically consisted of milk, a turkey or ham sandwich on white bread, raw vegetables, and an occasional bag of chips.

Nutritional Guidelines and Facts

With the justification that students attended school for half-day sessions, the only foods available to all students were snacks bought from vending machines. Snacks and beverages from the machines were high in sugar, saturated fats and sodium. The free lunches provided through the National School Lunch Program met the minimal nutrition standard, though staff suggests they did not seem particularly fresh.

Student Behavior before the Nutrition and Wellness Program

ACA received \$15,000 from this grant. With these funds ACA: developed a nutritional policy (see Appendix F), a website and distributed the Natural Ovens/ACA video [Impact of Fresh, Healthy Foods on Learning and Behavior](#) to every school district in Wisconsin and many places through out the country and the world.

⁵ These vending machines, owned by ARAMARK, were installed when the first floor of the building was used as office space.

⁶ ARAMARK began managing the Appleton Area School District's meal program in January of 1990. Prior to ARAMARK's entrance there was no hot lunch program in the district.

Typically, before school and during breaks, students would socialize in the student lounge while drinking soda and eating candy or chips. After these breaks staff noticed the students' irritability increased and their attention spans decreased. Staff concluded that there was most likely a relationship between the subsequent eruptions in bad behavior and what the students consumed.

Teachers commented that students displayed a lack of concentration. Students often interrupted their teachers and peers, lost their place during group readings, listened poorly, visited with each other during class, daydreamed, were off task, got up to sharpen their pencils often, did not follow directions and were not easily able to settle down to complete their writing assignments. Impulsively, students lost their tempers, stormed out of the classroom, used profane language and made inappropriate comments. Also, pre-Nutrition and Wellness Program, the students complained more of being tired or ill.

The Transition to the Nutrition and Wellness Program

With the conclusion of the first full school year in June 1997 (after a year and a half of total operation), ACA staff conducted an evaluation to determine the school's needs for the upcoming year.

Initiation of ACA's Physical Education Opportunities

Believing a significant educational component was missing, the staff decided physical fitness must be emphasized. After procuring grant money, the staff purchased weight lifting equipment. This equipment was accessible to the students the spring semester of 1997. By the fall of 1998 YMCA passes became available to students in need of physical education credits. By offering physical education classes and encouraging extracurricular physical activity, staff hoped increased physical wellbeing would translate into better behavior and greater overall academic performance.

Initiation of ACA's Food Service

During this time of evaluation (the summer of 1997) English teacher Mary Bruyette received a promotional pamphlet with a Natural Ovens Bakery⁷ loaf of bread. This pamphlet encouraged teachers to participate in a two-day nutrition seminar called "Peak Performance". Bruyette and Jason Stellmacher, ACA's science teacher, attended the seminar that summer. Natural Ovens' objective was to positively influence school nutrition offerings and policies. Natural Ovens was also looking to select a school for their Peak Performance school program. Through this program, Natural Ovens finances free, nutritious breakfasts to interested schools. Owners Barbara and Paul Stitt had long been dedicated to influencing people healthfully through their diets.⁸ In the course of

⁷ Natural Ovens Bakery is located in Manitowoc, Wisconsin. Natural Ovens offers breads, bagels, muffins, cookies, rolls, cereals, energy drink mixes that are free of preservatives, partially-hydrogenated fats, dough conditioners and bromated flour. Their products can be bought at their store, on line or found at grocery stores in the Mid-West and in selected stores throughout the United States. To learn more about Natural Ovens, visit their website at: www.naturalovens.com.

⁸ As a former chief probation officer in Akron, Ohio, Barbara Stitt utilized diet therapy. She found modifying the diets of her probationers positively influenced their delinquent and antisocial behaviors. As a scientist with a M.S. in biochemistry, Paul Stitt became interested in learning about the dangers of chemical

providing schools with nutritious breakfasts, the Stitt's were hoping to find evidence of improved student behavior and performance.

Following the seminar Bruyette and Stellmacher applied for and received the Natural Ovens' Peak Performance grant. In the fall of 1997, ACA staff began serving Natural Ovens fortified bagels heated in a Nesco roaster and Natural Ovens' nutrient rich energy drinks⁹, free to students at the start of each school session. At this time all vending machines were removed and water coolers were placed throughout the school. As staff conversed with students regarding the new changes, the majority of students revealed that, regardless of the session they attended, they usually ate nothing prior to arriving at school.

Several months into the Peak Performance program, ACA Principal LuAnn Coenen received a call from Barbara and Paul Stitt. The Stitt's offered to set up an experimental program to provide students a healthy and natural lunch¹⁰ in addition to breakfast. Natural Ovens also offered to cover all food systems costs for three years. The Stitt's expected that with a more nutritious meal program, students' behavior would noticeably improve. ACA enthusiastically agreed to the offer.

Although originally Natural Ovens agreed to cover the food system cost for three years (from the 1998-1999 school year through the 2000-2001 school year), they ended up financing it for five years (from the 1998-1999 school year through the 2002-2003 school year). Then, beginning in September of 2003 the ARAMARK Corporation took over the management of ACA's lunch program.

ACA's Nutrition and Wellness Program

ACA believes the main components that underlie a healthy school nutrition environment include: offering quality school meals with a variety of healthy choices, and a pleasant eating environment; a strong commitment from the school to health, nutrition and physical activity; nutrition education for the students, and compelling marketing. ACA wants its students to understand the importance a healthy diet plays in supporting the body and mind. The Nutrition and Wellness Program in its entirety consists of:

- breakfast in the morning, and lunch for both the morning and afternoon sessions;
- access to work out equipment and YMCA passes;
- encouragement for physical activity;
- nutrition education and,
- healthy behavior modeled by the staff.

additives, preservatives and unhealthy diets. He founded Natural Ovens Bakery in 1976 in order to positively influence his community's health by offering fortified products free of chemical additives and preservatives.

⁹ The Natural Ovens energy drink is a dry mix consisting of vitamins and ground flax seed. Staff blended this mixture with fruit juice and fresh whole fruit. See Appendix A#2 for a copy of the nutritional information found on the back of the energy mix packet.

¹⁰ Natural Ovens' maintains that healthy and natural foods are low in fat, salt and sugar. Also food should not be chemically processed and whole grains should be fortified. Fresh fruits and vegetables are the basis of all their school meals. Natural Ovens believes fresh water should be accessible to students at all times.

Impact of the Nutrition and Wellness Program on the Food and Dining Hall

As part of the agreement between ACA and Natural Ovens, a Nutrition and Wellness Lab was constructed. Designed to demonstrate an integration of nutrition and physical activity, the lab includes a kitchen, dining area, exercise area and game space. For the kitchen, Natural Ovens purchased food service equipment, including a refrigerator and salad bar cart. They also hired two cooks, one of whom was trained by Natural Ovens. Instead of sitting on couches, the floor, or at computer stations, the students now sit at round tables and eat with their peers and teachers. In this way, teachers' influences reach beyond the classroom as they model healthy nutritional choices and good behavioral and social skills at the lunch table. For ten of the twenty minutes designated for lunch, students must eat and socialize with their teachers and peers. With the remaining ten minutes of lunch, students are free to work out in the exercise area, play in the game space, or continue eating. Available in the exercise area is a variety of weight lifting equipment, three exercise bikes and a treadmill. The game space offers three pool tables, three foosball tables, air hockey, a basketball game and board games.

Rather than eating from the vending machine or the district's brown bags, sponsored by the National School Lunch Program, students, staff and visitors eat nutrient laden meals made daily from scratch by the cooks. These meals exceed the USDA nutrition standards and are sold for the district rate of \$1.00 for breakfast and \$2.50 for lunch. Students may pay with cash, or through a prepaid I.D. card. Students who cannot afford to eat, but who do not qualify for the National Free Lunch program, have received financial help from an anonymous community member. Students who are on the National Free Lunch Program or assisted by Appleton have a prepaid lunch card. Ninety-five percent of the students eat the school food. Students are not allowed to bring food or beverages to school. Those that do not eat ACA's breakfast or lunch simply do not eat while at school. For breakfast the cooks serve whole grain bread, bagels, muffins and granola with an energy drink and milk¹¹. Lunch consists of a fresh entrée, free of additives or chemicals, fresh fruit, a salad bar, whole grain breads, low fat cookies for dessert and an energy drink and/or milk. (See Appendix B for a more complete outline of the food offered.)

The following is a typical weekly menu for the program:

- **Monday:** Tacos, fresh fruit, salad bar, energy drink, whole grain breads
- **Tuesday:** Scalloped potatoes and ham, corn, Texas toast, fresh fruit, salad bar, energy drink, whole grain breads
- **Wednesday:** Chicken Noodle Soup, Turkey Sandwiches, Ham or Egg Salad, fresh fruit, salad bar, energy drink, whole grain breads.

¹¹ Skim milk was originally offered only to meet the requirements for the National School Hot Lunch Program funding. Natural Ovens felt the consequences of dairy outweighed the benefits. Since the ARAMARK Corporation's management ACA has been serving cottage cheese, sliced cheese and sour cream. The ARAMARK Corporation's believes dairy is an important dietary component of a healthy lunch.

- **Thursday:** Chicken Patty on a Bun, Roasted Vegetables and Pasta, Fresh Fruit, salad bar, energy drink, whole grain breads.
- **Friday:** Baked Omelets, Sausages, fresh fruit, salad bar, energy drink, whole grain breads

(See Appendix C for an ACA April 2003, an April 2004 and an Appleton District April 2003 menu)

ACA qualifies for and receives food from the Federal Commodities program. The list of offerings changes monthly. ACA selects only offerings that are nutritious and not heavily processed. In the past the school has ordered frozen fruits from this program. All other food is purchased through the ARAMARK Corporation contracted suppliers.¹² The ARAMARK Corporation continues to buy Natural Ovens energy drink mixes, whole grain fortified breads and low fat cookies.

ACA's food service program began during the height of the mad cow disease scare, thus Natural Ovens resolved not to serve red meat. This decision is being maintained by the ARAMARK Corporation for ACA. ARAMARK serves red meat at the other schools it services.

Atmosphere

Since rethinking nutrition and wellness, ACA began experimenting with the influence of lighting, music and aromas. The school is in the process of transitioning to full spectrum lighting to imitate a more natural light and combat seasonal affective disorder. In the Nutrition/Wellness Lab and throughout the halls, relaxation music is played on a five disk CD changer all day. Through out the main hall and in the English room blends of essential oils fill the air. ACA buys most of the aromas from Natures Sunshine Products of Provo, Utah. They choose scents that purportedly help increase memory and are focusing or calming.

Impact of the Nutrition and Wellness Program on Student Behavior

Staff prepared themselves to hear students' voice negative opinions regarding the removal of the vending machines, but most did not. Bretthauer reports that students generally accepted the changes with a simple explanation from a nutritional standpoint.

ACA staff asserts that students' disruptive behavior and health complaints diminished substantially. Students also seemed more able to concentrate. Social Worker Deb Larson explained that a reduced amount of sugar and processed food in the students' diets allows students' to be more stable and that this makes mental health and anger management

¹² The main supplier is Sysco. ARAMARK disclosed that they also purchase food from Kellogg and Natural Ovens for ACA.

issues easier to manage. Teacher Mary Bruyette said she saw changes “overnight”. She noticed a considerable decrease in impulsive behaviors, such as talking out, fidgeting and the use of foul language. Henceforth she has had fewer disciplinary referrals to the office for students who could not settle down and do their coursework. Complaints of headaches, stomachaches, and feeling tired also lessened. Students were no longer hungry mid-morning or mid-afternoon. ACA staff mutually feels they are able cover a greater amount of material at a more challenging level.

According to Principal LuAnn Coenen, negative behaviors such as vandalism, drug and weapons violations, dropout and expulsion rates, and suicide attempts are virtually nonexistent.

Accessible state reports filed on student behavior point to improved rates of attendance, suspension and truancy. However only four school years of data were available. (See Appendix D for the 1998-1999 to 2001-2002 school year “Appleton Area School District: Report to Parents and the Community”.)

An Experiment: Junk Food Day

Every year during the first five years of the Nutrition and Wellness Program, from the 1998-‘99 school year to the 2002-‘03, ACA arranged a Junk Food Day. Instead of serving bagels and energy drinks, students and staff drank sugar sweetened soda and Kool-Aid and ate chips, brownies, cookies, Pop Tarts and candy bars. Staff said during the few experimental Junk Food Days they have hosted, students are “wired” and are unable to focus. Through out the day they complain of stomachaches, headaches, and feeling tired. Dean of Students Greg Bretthauer said that attendance is low following Junk Food Day. After a day of sugar highs and lows, both students and staff have stated that they never want to do it again. Still, ACA and Natural Ovens felt this yearly event was an important reminder. However, since the ARAMARK Corporation’s management beginning in September of 2003, ACA’s food service no longer hosts a Junk Food Day.

In the fall of 2002, Mary Bruyette conducted a survey to determine the differences students felt before and after Junk Food Day. Bruyette gave this survey to all students in her English classes. Seventy-five out of the one hundred twenty students who participated in the Junk Food Day were enrolled in her class. As an assignment they were asked to answer “yes” or “no” to a series of questions. All seventy-five students completed the survey. There were several notable differences. Before Junk Food Day, 70% of students said yes to having felt “happy and nice” after school. After Junk Food Day, only 13% responded yes. A total of 76% of students said they slept well before Junk Food Day, compared to 29% after. Only 10% of the students had a stomach-ache before and 50% after. (See Appendix E for the complete Junk Food Day Before and After survey results.)

While this is not an empirical survey, it is the only data ACA gathered regarding Junk Food Day. What this survey does tell us is that at least half the students perceive the nutritional content of their diets on Junk Food Day to have some kind of effect on them.

There was a 57% decrease in students who reported having felt “happy and nice”, a 47% decrease in students who felt they slept well and a 40% increase in students with stomach-aches.

Moving from a Grant Funded to a For-Profit Managed Food Service

In September of 2003 the ARAMARK Corporation began managing ACA’s food service. This was a significant change in management, from a highly subsidized program where cost restrictions were minimal, to a for-profit management company. ARAMARK and ACA have met some challenges while trying to maintain the high taste, quality and nutrition standards set by Natural Ovens (which are above and beyond federal standards) and still run a cost effective program. Under Natural Ovens’ management, labor and food costs were increased as the chef frequented the local grocery store twice a week to shop for fresh produce, rather than receiving shipments of often prepared foods from large suppliers. An ARAMARK representative stated that ARAMARK made a “gentleman’s agreement to operate the program [following the established nutrition standards] . . . for a year. This included no processed products, using Natural Ovens products and following the menu pattern as set (with an unlimited salad bar).” The two original cooks remained at ACA and became employees of the ARAMARK Corporation. With this switch in management, minor changes have been made to the menu. As noted in the “Impact of the Nutrition and Wellness Program on the Food and Dining Hall” section above, the ARAMARK Corporation added a few dairy items. ACA has also seen the addition of two new cereals, one of which lists sugar as its second ingredient. Under the Appleton Area School District’s Nutrition Standards, adopted June 9, 2003, “Candy is defined as any item that has sugar . . . listed as one of the first two ingredients.” Also, some staff members have voiced concerns about a perceived change in the quality and taste of the food, a decrease in student meal participation and an increase in student behavior problems. Together, ACA and ARAMARK are trying to work out the kinks.

Nutrition and Wellness Program Funding and Contracts

Natural Ovens’ Funding and Contract

In the fall of 1998, Natural Ovens Bakery contributed over \$100,000 in initial investment to the ACA program. Each of the five years Natural Ovens managed the meal program, they contributed another \$30,000 in operation expenses. With the exception of assistance from the National School Hot Lunch Program for the free and reduced meals, all funding came from Natural Ovens Bakery. Although initially Natural Ovens agreed to fund the program for three years, they continued sponsoring the program for five years.

Federal and State Subsidies

According to Greg Bretthauer, from ACA’s inception, about 60% of the students qualify for lunch subsidies from the National School Lunch Program. Because they had no kitchen, in February 1996, ACA purchased brown bag lunches from ARAMARK for these students. With the installation of a kitchen in the spring of 1998, ACA began putting the money from the subsidy toward the regular meals ACA offers.

Table 1: Reimbursement ARAMARK receives for each meal from the National School Lunch Program based on the 2004-2005 school year:

- School Meal Eligibility category	- Breakfast	- Lunch
- Paid	- .23	- .21
- Reduced	- .93	- 1.84
- Free	- 1.23	- 2.24

In addition to reimbursements from the National School Lunch Program, ARAMARK receives a state reimbursement of 10 cents for every breakfast sold and .047 cents for every lunch. Full price breakfast costs \$1.00 and lunch at \$2.50.

If revenue for Appleton Area School District’s meal program exceeds ARAMARK’s expenditures, the additional money remains with the school district. For example: for the 2003-2004 school year, the district made money, so ARAMARK returned about \$6,000 to the district. This money goes into the district’s Fund 50, a source of money used to update the food service department.

Vending Machines

Removing the vending machines from the school posed no problems as ACA had signed no contracts and received no revenue from vending sales.

School District’s Cost Savings

Further research is needed to calculate a cost analysis of a school district’s savings resulting from decreased high maintenance discipline problems, trash, and graffiti. It would be helpful if schools recorded how much time and money they spend on graffiti removal and trash collection, and how much time teachers and staff spend on discipline problems before and after a nutrition program is installed. Additional research is also needed to assess the economic practicalities of taking the ideals of the nutrition and wellness program from privately funded sources such as Natural Ovens to the publicly funded arena.

District-wide Changes

Because of ACA’s success, the entire Appleton Area School District is now converting to a healthier meal program for all 25 schools, serving in total approximately 15,000 students. In September 2003 the new nutrition standards went into effect.¹³ The school

¹³ For complete District Nutrition Standards see Appendix F.

district's entire menu choices have changed. High fat products, candy and soda are no longer sold. Juice drinks with sugar added are on a three year faze-out plan:

- 2003-04 School Year: Milk, water and beverages containing 10% fruit juice with artificial sweetener may be sold on school grounds both prior to and throughout the instructional day.
- 2004-05 School Year: Milk, water and beverages containing 25% fruit juice may be sold on school grounds both prior to and throughout the instructional day.
- 2005-06 School Year: Milk, water and beverages containing 100% fruit juice may be sold on school grounds both prior to and throughout the instructional day.

The district believes a healthy school environment should not depend on revenue from the sales of high fat, low nutrient foods. In addition to a more nutritious meal program, nutrition education is being integrated into the K through 12 curricula. The district also has adopted plans to provide nutrition education to the parents of elementary, middle and high school students.

Publicity and Replication in other Schools

ACA's nutrition and wellness program has received much publicity and recognition. The school continues to receive inquiries about their program. The following is a resource list of interest, publicity, interviews and articles ACA has collected on their program:

Interviews with staff and students from ACA have been heard on Good Morning America in January 2003, Wisconsin Public Radio several times, Public Radio in New Zealand, NBC News Chicago in the Spring of 2003, in the recent documentary "Super Size Me", and in Good Housekeeping Magazine in September of 2003, Food and Wine Magazine in Italy and other articles and internet items ACA never sees but hears about. Because of publicity like this, the school receives frequent inquiries and visits from other schools. The Coldwell-Canyon Springs School District from Idaho has visited a number of times and is seriously considering replicating ACA's nutrition and wellness program. Most recently the PBS show *Healing Quest* will include ACA for one of their second season shows about nutrition. ACA has two videos showcasing their nutrition program. Currently Natural Ovens and ACA are working on a third, more up to date video. Because of ACA's success, the Dean of Students Greg Bretthauer was recently appointed to serve on the Governors Task Force for Health and Nutrition in Wisconsin.

Conclusion: Nutrition as a Component of Better Student Behavior and Improved Student Performance

ACA was open a year and a half prior to the implementation of the Nutrition and Wellness Program. Unfortunately, no behavioral data was collected before or after the implementation of this program, nor were the changes documented. Clearly no scientifically sound conclusion may be drawn regarding the effects of the program on student behavior. Because we are relying solely on anecdotal descriptions by the staff

who implemented the program, there exists a barrage of possible explanations for the perceived increase in better student behavior.

It is entirely possible that other nearly simultaneous changes were equally as influential on the students' behavior as the nutritional content of the food that was served. Such changes included integrating character development into the students' course work, the atmospheric changes of playing "relaxation music" softly throughout the school, the influence of the teachers eating with the students, the increase in students' physical activity, or the fact that students went from often eating nothing in the morning to eating breakfast. Another possibility is that a sort of placebo effect took place. The administration and staff who implemented these changes also evaluated the success of the program and they undoubtedly wanted to see positive improvements. One could argue that the changes staff saw "overnight" were not in actuality as extreme.

However, research does associate nutritional influences with behavior. Nutritional deficiencies cause recognizable symptoms which disappear once the deficiency is alleviated.¹⁴ The effects of extreme nutritional deprivation such as starvation include depression, apathy, irritability, and growth retardation.¹⁵ Research has shown students from food insufficient families (families who report not having an adequate supply of food) have lower test scores in arithmetic, are more likely to be held back a grade, have difficulty getting along with their peers, and are more likely to have seen a psychologist.¹⁶ The USDA Fruit and Vegetable Pilot Program found that teaching staff perceived an increase in students' attention during class as a result of consuming an increased amount of fruits and vegetables.¹⁷ Similarly, studies of the School Breakfast Program Pilot Project found associations between participation in the breakfast program and better student behavior as well as the perception of better student behavior.¹⁸

Clearly both ACA and the Appleton Area School District believe that the Nutrition and Wellness Program have contributed to an improved school environment. ACA staff strongly feel that good nutrition should be part of every school's operating budget. Although the initial investment is large, ACA believes "payback" is seen each and every day through the decrease in high maintenance discipline problems (which steal precious instructional time), a decrease in trash and graffiti throughout the school, and an increase in students' ability to learn. Students also seem generally healthier and are better able to perform while at school. Additionally, ACA staff report that many students have improved their nutritional choices outside of school as well.

¹⁴ Nestle M. *Food Politics: How the Food Industry Influences Nutrition and Health*. Berkeley, CA: University of California Press, 2002; p.379

¹⁵ *Ibid.*, p.380

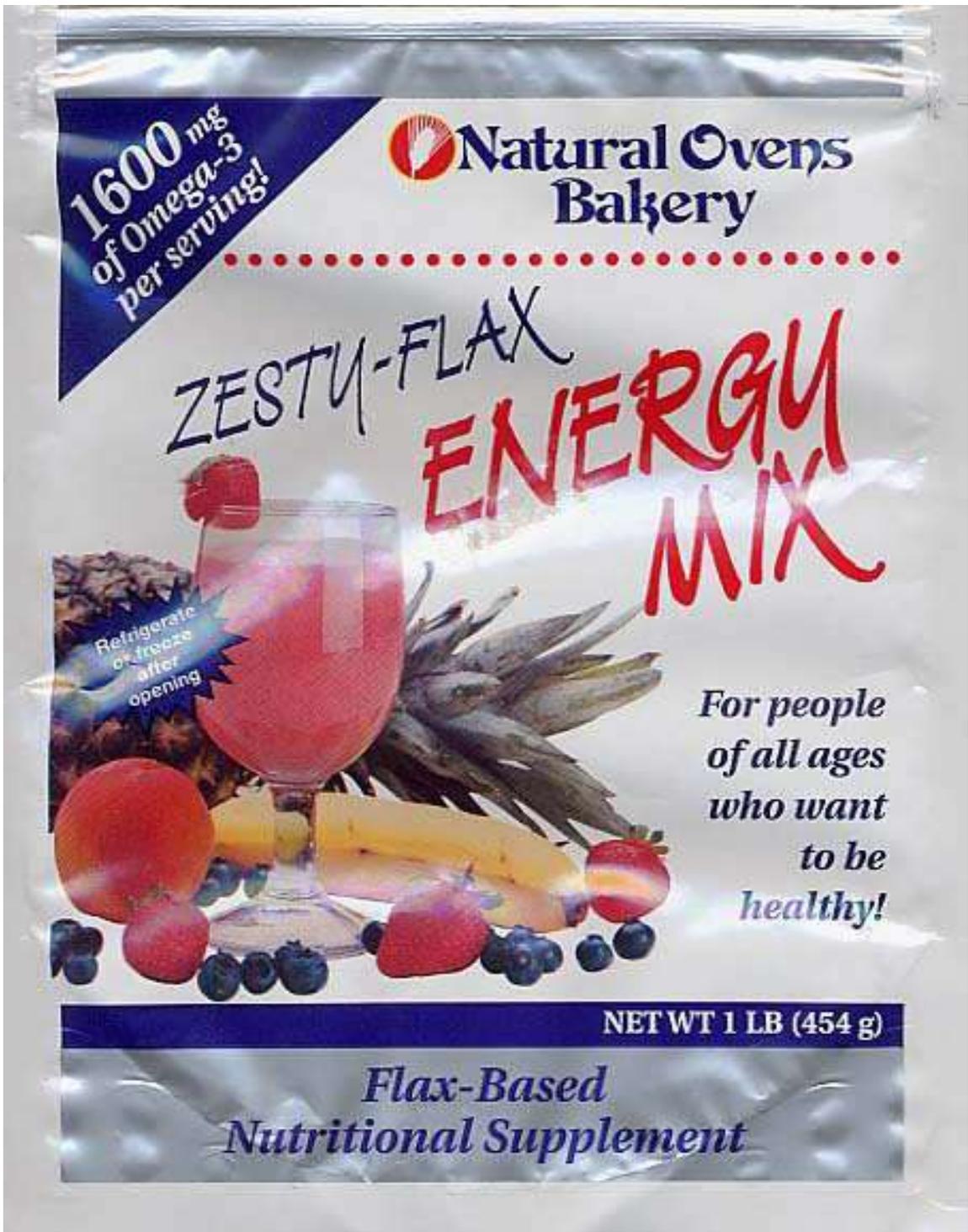
¹⁶ Alaimo K, Olson C M, Frongillo E A Jr. Food Insufficiency and American School-Aged Children's Cognitive, Academic, and Psychosocial Development. *Pediatrics*. Jul 2001; 108,1: 44-53

¹⁷ Buzby JC, Guthrie JF, Kantor LS. "Evaluation of the USDA Fruit and Vegetable Pilot Program." *Report to Congress*. May 2003. <http://www.ers.usda.gov/publications/efan03006.pdf> (Sept. 2004).

¹⁸ McLaughlin JE, LS Bernstein, MK Crepinsek, LM Daft, JM Murphy. "Evaluation of the School Breakfast Program Pilot Project: Findings from the First Year of Implementation," *Nutrition Assistance Program Report Series*, No. CN-02-SBP, Project Officer: Anita Singh. U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation, Alexandria, VA: 2002.

Schools planning on implementing nutrition or wellness programs would provide a great service if they would systematically document the changes made, the challenges met, and gauge the success of their program using the most valid and reliable indicators within their means. Further discussion regarding appropriate indicators can be found in the full report *Better Food, Better Behavior* which this case study has been created for. The report will be made available on the Michael Fields Agricultural Institute website (www.MichaelFieldsAgInst.org) by the end of April 2005.

Appendix A.1



Appendix A.2

ZESTY-FLAX ENERGY MIX

Zesty Flax Energy Mix

contains 1600 mg of Omega-3, an essential fatty acid.

This nutritionally-balanced blend of ingredients provides a high level of sustained calm energy, allowing your body to perform at its best.

Enjoy **Zesty Flax Energy Mix** powder by blending it with your favorite juice or sprinkling it on other foods twice daily. One or two tablespoons daily helps you have more energy and gives you a bonus of soft skin and shining hair.

Directions for use:

- Blend 1 tablespoon in 6 ounces of juice, twice daily. Start with 1/2 tablespoon per day and gradually increase to 2 tablespoons daily.
- Adjust the amount of juice to suit your taste.
- Blend with pineapple, orange, grape, or other juice; or sprinkle on cereal.
- Add strawberries, banana, or any other fresh or frozen fruit.
- Blend on high for 40 seconds.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Ingredients: Stabilized Ground Flaxseed, Oat Bran, Crystalline Corn Fructose, Beta Carotene, Magnesium Oxide, Choline Bitartrate, Citric Acid, Ascorbic Acid, Zinc Sulfate, Folic Acid, Vitamin E300 or E350, Beta Carotene, Niacinamide, Calcium Panthothenate, Seleno Yeast, Thiamin, Vitamin B12, Vitamin B6, Chromium Polymicofinate, Riboflavin, Vitamin D2.

 Kosher Pareve



Supplement Facts

Serving Size 1 tablespoon (10 g)
Servings Per Package 45

	Amount Per Serving	% Daily Value
Calories	60	
Calories from Fat	30	
Total Fat	3 g	6%*
Saturated Fat	0 g	
Cholesterol	0 mg	0%
Total Carbohydrates	4 g	1%*
Dietary Fiber	2 g	8%*
Sugars	1 g	
Protein	2 g	
Vitamin A	1340 IU	25%
Vitamin C	12 mg	20%
Vitamin D	36 IU	10%
Vitamin E	4 IU	15%
Thiamin	21 mcg	15%
Riboflavin	18 mcg	10%
Niacin	2 mg	10%
Vitamin B6	22 mcg	15%
Folate	50 mcg	15%
Vitamin B12	1 mcg	20%
Pantothenic Acid	1 mg	10%
Calcium	1 mg	0%
Magnesium	34 mg	8%
Zinc	2 mg	15%
Selenium	13 mcg	20%
Chromium	23 mcg	20%
Sodium	0 mg	0%
18:2-Linoleic	0 g	**
18:3-Linolenic	2 g	**
Choline	24 mg	**

** Daily Value not established.

* Percent Daily Values are based on a 2,000 calorie diet.

Protected by U.S. Pat. No. 4,857,326 for composition and use.

Natural Ovens Bakery

Corporate Headquarters - Manitowoc, WI

Customer Service 800-558-3535

Homesales Dept. 800-772-0730

www.naturalovens.com

Appendix B

Menu for the Breakfast Program (as is written in a summary of the program):

- Drinks: bottled water, 100 percent juice, skim milk, and a blended energy drink.
- Breads: a variety of whole grain bagels, breads and muffins, all of which are free of additives, dyes, artificial preservatives, and saturated fats. The breads are made with whole wheat flour, oat bran, wheat germ, yeast, fructose and fortified flaxseed.
- Granola cereal
- Spreads: fresh peanut butter, natural fruit preserves and Promise margarine.
- Fresh fruits: including bananas, apples, pears, oranges, plums, seasonal fruits, etc.

Menu for the Lunch Program (as is written in a summary of the program):

- Breads: a variety of whole grain bagels, breads and muffins, all of which are free of additives, dyes, artificial preservatives, and saturated fats. The breads are made with whole wheat flour, oat bran, wheat germ, yeast, fructose and fortified flaxseed.
- Salad Bar: dark green lettuce (no iceberg head lettuce), cherry tomatoes, carrot sticks, cucumber slices, sliced mushrooms, black olives, peanuts, sunflower seeds, broccoli and cauliflower spears, shredded carrots, diced boiled eggs, croutons made from whole grain breads, home-made apple sauce, shredded cabbage, peach and pear slices, pineapple chunks, and fruit salad
- Hot Entrée: Two on-site cooks prepare the meals daily. No food is prepared by frying in a grease product. Meat products used include lean pork, chicken, turkey and fish. A variety of spices, soymilk products and tofu are used as natural flavor enhancers in many of the recipes.
- ACA offers Natural Oven's cookies as an al la cart item Monday through Thursday. The Cookie is served with the meal on Fridays. An additional serving of milk is also offered as an al la cart item everyday.

Appendix D:

Appleton Area School District: Report to Parents and the Community

Pupils Suspended: Suspended students are only counted once.

Suspension Rate: is the number of days lost to suspension divided by the possible days of attendance.

Pupils Habitual Truant: are students absent from school with out an acceptable excuse for part or all of five or more days a semester.

Habitually Truant Rate: is the number of habitual truants, divided by the entire enrollment, counted on the third Friday in September.

Retentions: is the number of students unable to progress to the next grade level.

Retention Rate: is the number of retentions divided by the entire enrollment.

Expulsions: is the number of expelled students.

Expulsion Rate: is the number of expulsions divided by the entire enrollment.

1998-99 School Year:

Attendance and Enrollment: 83	Attendance Rate: 77.69%
Pupils Suspended: 40	Suspension Rate: 0.457%
Pupils Habitually Truant: 54	Habitual Truant Rate: 65.060%
Retentions: 0	Retention Rate: 0%
Expulsions: 0	Expulsion Rate: 0%

1999-00 School Year:

Attendance and Enrollment: 88	Attendance Rate: 87.95%
Pupils Suspended: 15	Suspension Rate: 0.2737%
Pupils Habitually Truant: 77	Habitual Truant Rate: 87.500%
Retentions: 0	Retention Rate: 0%
Expulsions: 0	Expulsion Rate: 0%

2000-01 School Year:

Attendance and Enrollment: 93	Attendance Rate: 86.96%
Pupils Suspended: 16	Suspension Rate: 0.246%
Pupils Habitually Truant: 62	Habitual Truant Rate: 66.667%
Retentions: 0	Retention Rate: 0%
Expulsions: 0	Expulsion Rate: 0%

2001-02 School Year:

Attendance and Enrollment: 91	Attendance Rate: 98.29%
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Pupils Suspended: 9
Pupils Habitually Truant: 30
Retentions: 49
Expulsions: 0

Suspension Rate: 0.163%
Habitual Truant Rate: 32.967%
Retention Rate: 53.846%
Expulsion Rate: 0%

Appendix E.1: Before to Junk Food Day Survey

Given by English teacher Mary Bruyette to her students in the Fall of 2002

After School I Felt:	Yes	No
Hungry for supper	43%	57%
Like fighting with someone	14%	86%
Like studying	5%	95%
Like doing chores	17%	83%
Like helping other people	43%	57%
Like sleeping	63%	37%
Like crying	6%	94%
Happy and nice	70%	30%
Sick to my stomach	8%	92%

Last Night I:	Yes	No
Slept well	76%	24%
Had good dreams	56%	44%
Had bad dreams	14%	86%
Was awake several times	27%	73%
Felt miserable	8%	92%
Was constipated	3%	97%
Had a stomachache	10%	90%

Appendix E.2: After to Junk Food Day Survey

Given by English teacher Mary Bruyette to her students in the Fall of 2002

After School I Felt:	Yes	No
Hungry for supper	48%	52%
Like fighting with someone	37%	63%
Like studying	2%	98%
Like doing chores	8%	92%
Like helping other people	19%	81%
Like sleeping	81%	19%
Like crying	31%	69%
Happy and nice	13%	87%
Sick to my stomach	50%	50%

Last Night I:	Yes	No
Slept well	29%	71%
Had good dreams	19%	81%
Had bad dreams	50%	50%
Was awake several times	38%	62%
Felt miserable	15%	85%
Was constipated	50%	50%
Had a stomachache	60%	40%

Appleton Area School District-Appleton, Wisconsin STUDENT NUTRITION

The Appleton Area School District promotes healthy schools by supporting wellness, good nutrition, and regular physical activity as a part of the total learning environment. The District supports a healthy environment where children learn and participate in positive dietary and lifestyle practices. By facilitating learning through the support and promotion of good nutrition and physical activity, schools contribute to the basic health status of children. Improved health optimizes student performance potential and ensures that no child is left behind.

A. Provide a comprehensive learning environment for developing and practicing lifelong wellness behaviors.

The entire school environment, not just the classroom, shall be aligned with healthy school goals to positively influence a student's understanding, beliefs, and habits as they relate to good nutrition and regular physical activity. A healthy school environment should not be dependent on revenue from high-fat, low nutrient foods to support school programs.

B. Support and promote proper dietary habits contributing to students' health status and academic performance.

All foods available on school grounds and at school-sponsored activities during the instructional day should meet or exceed the District Nutrition Standards. Emphasis should be placed on foods that are nutrient dense per calorie. Foods should be served with consideration toward variety, appeal, taste, safety, and packaging to ensure high quality meals.

C. Increase the amount of time students are engaged in physical activity.

A quality physical education program is an essential component for all students to learn about and participate in physical activity. Physical activity should be included in a school's daily education program from grades pre-K through 12. Physical activity should include regular instructional physical education, co-curricular activities, and recess. Substituting any one of these components for the others is not appropriate.

D. The Appleton Area School District is committed to improving academic performance in high-risk groups so that no child is left behind.

Educators, administrators, parents, health practitioners, and communities must all acknowledge the critical role student health plays in academic stamina and performance and adapt the school environment to ensure students' basic nourishment and activity needs are met. Research highlighting the positive relationship between good nutrition, physical activity, and the capacity of students to develop and learn should be highlighted to ensure widespread understanding of the benefits to healthy school environments. The diversity of the student population (e.g., economic,

religious, minority, cultural, and medical) should be considered at all times to ensure that all student needs are being met so that no child is left behind.

Adoption Date: June 9, 2003

STUDENT NUTRITION

Procedures

The Appleton Area School District promotes healthy schools by supporting wellness, good nutrition, and regular physical activity as a part of the total learning environment. The District supports a healthy environment where children learn and participate in positive dietary and lifestyle practices. By facilitating learning through the support and promotion of good nutrition and physical activity, schools contribute to the basic health status of children. Improved health optimizes student performance potential and ensures that no child is left behind.

Hot Lunch/Breakfast Program:

- The full meal program will continue to follow the U.S. Government's Nutrition Standards.
- The Hot Lunch/Breakfast provider will be expected to make every effort to follow the District's Nutrition Standards when determining the items in a la carte sales.
 - A la carte items that do not meet the District Nutrition Standards may be acceptable for student consumption within moderation (i.e. limit quantity sold to an individual student).
 - A la carte items that do not meet the District Nutrition Standards may be acceptable when offered on an intermittent basis.

Lunchroom Climate:

- A lunchroom environment that provides students with a relaxed, enjoyable climate should be developed.
- It is encouraged that the lunchroom environment be a place where students have:
 - adequate space to eat and pleasant surroundings;
 - adequate time for meals (the American Food Service Association recommends at least 20 minutes for lunch from the time they are seated); and
 - convenient access to hand-washing facilities before meals.

Fundraising:

- All fundraising projects are encouraged to follow the District Nutrition Standards.
- All fundraising projects for sale and consumption within and prior to the instructional day will be expected to make every effort to follow the District's Nutrition Standards when determining the items being sold.
 - Items being sold that do not meet the District Nutrition Standards may be acceptable for student consumption within moderation (i.e. limit quantity sold to an individual student).

- Items being sold that do not meet the District Nutrition Standards may be acceptable when offered on an intermittent basis.

Teacher-to-Student Incentive:

Strong consideration should be given to nonfood items as part of any teacher-to-student incentive programs. Should teachers feel compelled to utilize food items as an incentive, they are encouraged to adhere to the District Nutritional Standards.

341.34-Rule (cont.)

Student Nutrition Education:

The Appleton Area School District has a comprehensive curriculum approach to nutrition in kindergarten through ninth grade. Beginning with the 2003-2004 school year, all instructional staff will be encouraged to integrate nutritional themes into daily lessons when appropriate. The health benefits of good nutrition should be emphasized. These nutritional themes include but are not limited to:

- | | |
|----------------------------------|-------------------------------|
| *Knowledge of food guide pyramid | *Healthy diet |
| *Healthy heart choices | *Food labels |
| *Sources and variety of foods | *Major nutrients |
| *Guide to a healthy diet | *Multicultural influences |
| *Diet and disease | *Serving sizes |
| *Understanding calories | *Proper Sanitation |
| *Healthy snacks | *Identify and limit junk food |
| *Healthy breakfast | |

The District Nutrition Policy reinforces nutrition education to help students practice these themes in a supportive school environment.

Parent Nutrition Education:

- Nutrition education will be provided to parents beginning at the elementary level. The goal will be to continue to educate parents throughout the middle and high school levels.
- Nutrition education may be provided in the form of handouts, postings on the District website, or presentations that focus on nutritional value and healthy lifestyles.

AASD Nutrition Committee:

With the purposes of monitoring the implementation of this policy, evaluating policy progress, serving as a resource to school sites, and revising the policy as necessary it is recommended that a District-wide nutrition committee be established. The committee would meet a minimum of two times annually with committee membership as follows:

- District Food Service Coordinator

- Dietician
- Parent representative from each school level
- Student representative from each school level
- Staff member representative from each school level
- Administrative Representative, Co-Chair
- Physical Education and Health Program Leader, Co-Chair

Adoption Date: June 9, 2003

Appendix F.3

DISTRICT NUTRITION STANDARDS

The Appleton Area School District strongly encourages the sale or distribution of nutrient dense foods for all school functions and activities. Nutrient dense foods are those foods that provide students with calories rich in the nutrient content needed to be healthy. In an effort to support the consumption of nutrient dense foods in the school setting the District has adopted the following Nutrition Standards governing the sale of food, beverage, and candy on school grounds. Sites are encouraged to study these Standards and develop building policy using the following District Nutrition Standards as minimal guidelines.

Food:

- Any given food item for sale prior to the start of the school day and throughout the instructional day will have no more than 30% of its total calories derived from fat.
- Any given food item for sale prior to the start of the school day and throughout the instructional day will have no more than 10% of its total calories derived from saturated fat.
- Nuts and seeds are exempt from these standards because they are nutrient dense and contain high levels of monounsaturated fat. Foods high in monounsaturated fat help lower “bad” LDL cholesterol and maintain “good” HDL cholesterol.
- It is recognized that there may be rare special occasions when the school principal may allow a school group to deviate from these guidelines.
- Encourage the consumption of nutrient dense foods, i.e. whole grains, fresh fruits, and vegetables.

Beverages:

- Vending sales of pop or artificially sweetened drinks will not be permitted on school grounds.
- The nonvending sale of pop or artificially sweetened drinks will not be permitted on school grounds both prior to the start of the school day and throughout the instructional day, but will be permitted at those special school events that begin after the conclusion of the instructional day.
- The vending sale of beverages, other than soda, with less than 10% fruit juice may begin at the conclusion of the instructional day.
- Milk, water, and 100% fruit juices may be sold on school grounds both prior to and throughout the instructional day. This standard will be phased-in over the next three school years in the following manner:
 - 2003-04 School Year: Milk, water, and beverages containing 10% fruit juice with artificial sweetener may be sold on school grounds both prior to and throughout the instructional day.
 - 2004-05 School Year: Milk, water, and beverages containing 25% fruit juice may be sold on school grounds both prior to and throughout the instructional day.
 - 2005-06 School Year: Milk, water, and beverages containing 100% fruit juice may be sold on school grounds both prior to and throughout the instructional day.

Candy:

- Vending sales of candy will not be permitted on school grounds.
- Nonvending sales of candy will be permitted at the conclusion of the instructional day.
- Candy is defined as any item that has sugar (including brown sugar, corn sweetener, corn syrup, fructose, glucose {dextrose}, high-fructose corn syrup, honey, invert sugar, lactose, maltose, molasses, raw sugar, table sugar {sucrose}, syrup) listed as one of the first two ingredients.