



2009-2010 *Kidz Bite Back* Evaluation
Tampa Bay Initiative Research Findings for Year 3

September 2010

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Acknowledgements

Allegany Franciscan Ministries
Blue Foundation for a Healthier Florida
State Farm Youth Advisory Board
Hillsborough County School District
Pinellas County School District
Pinellas County Health Department
Hillsborough County Health Department

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Executive Summary

The childhood obesity epidemic has reached national concern highlighted by First Lady Michelle Obama's national appeal for increased physical activity among children. To address this issue on a local level, St. Joseph's Children's Hospital's Children's Advocacy Center contracted with the social marketing firm of *dewey and associates* to implement an innovative social marketing program using peer-to-peer influences and counter-marketing strategies to address modifiable factors contributing to the rise in obesity, specifically dietary intake and physical activity. More specifically, the program was aimed at moderation in consumption of sodas, fast food and junk food. The implementation of the social marketing program, *Kidz Bite Back*, completed Year 1 (2007-2008), Year 2 (2008-2009), and Year 3 (2009-2010). The actual campaign time in the schools spanned, on average, six months. This report represents the completion of the quantitative findings from Year 3 and a trending of comparisons throughout the three-year implementation. Survey changes from Year 2 to Year 3 were focused on simplifying the questions for improved readability for the children.

Quantitative data in Year 3 were collected from 13 of the same schools in Hillsborough and Pinellas counties as in Year 1 and Year 2, with a total of 14 schools participating in Year 3. Four primary audience groups were included in the sample: 4th and 5th grade students, parents/guardians, 4th and 5th grade teachers, and school principals. Volunteer students, parents/guardians, teachers, and principals completed the pre-surveys and post-surveys with *Kidz Bite Back* as the intervention. Participation in Year 3 included 8 principals, 62 teachers, 1513 parents/guardians, and 1610 students as noted in the post-survey. In gender distribution female outnumbered male participation in all (principal, teacher, parent/guardian) surveys except for the student surveys, in which males and females were equal.

The following sections present highlights from each major audience segment surveyed.

Principals: Overall, the principals viewed *Kidz Bite Back* as favorable and as having a positive impact on the children, specifically academic achievement, self-esteem, and social interaction. The reported social interaction impact increased from Year 2 (M= 3.9) to Year 3 (M= 4.3) along with a slight increase in reported mean academic achievement from Year 2 (M= 4.1) to Year 3 (M= 4.3). Reported student self esteem also rose from Year 2 (M= 4.1) to Year 3 (M= 4.4). [M denotes mean score]. Principals ranked the soft drink companies as more caring for the health of kids from Year 2 to Year 3 and the television companies as less caring for the health of kids. The ranking of junk food companies and fast food companies remained essentially unchanged from Year 2 to Year 3.

Teachers: Teachers rated *Kidz Bite Back* as average to above average with regards to improving the self esteem and social interaction of 4th and 5th grade students. Self-esteem mean ratings rose from Year 2 (M= 3.4) to Year 3 (M= 3.6) and social interaction rose from Year 2 (M= 3.5) to Year (M= 3.6). Compared to Year 2 data, all ratings of the perceived caring of companies towards the health of kids essentially remained the same for Year 3, with the exception of video companies. Teachers reported that video companies may care slightly more for kid's health than in previous years. This may be attributable to devices such as the *Wii* that provides fitness activities for children.

Parents/Guardians: Mothers comprised the majority of respondents in the parent/guardian survey. The parent surveys revealed that they have moderate to a lot of control over the physical activity of their children and 84% are satisfied with the amount of physical activity that schools

provide, representing an increase in reported school satisfaction from Year 2. The majority of parents felt they have some control over their child's dietary intake; however, there is a feeling of less control in comparison with control over physical activity. The data showed the parental estimate of child's weight was positively correlated to the number of hours that the parents and the child watched television, so that as television viewing by the parent and child increased so did the estimated child's weight. Also, the child's estimated weight by the parent was positively correlated with the parent's perceived weight. There were a few negative correlations: a) as the parent's level of fitness increased, the parent's and the child's weight decreased; b) as the parent's age increased, the number of hours that the child watched television decreased; and c) as the parent's weight increased the parent's reported physical fitness decreased.

With regards to *Kidz Bite Back*, most of the parents (79%) reported their child educating them on the Big Fat Industries and Couch Potato Companies with 72% of parents reporting that their child's involvement in the program had led to their family eating less junk food, fast food and consuming less soft drinks. Over half of the parents (68%) reported a decrease in their family's television viewing and video game playing as a result of their child's involvement in *Kidz Bite Back*. With regard to how the parents viewed caring of the companies towards the health of kids, there was no statistically significant difference in how parents viewed the television, fast food, video game and junk food companies on the caring of children's health in Year 3.

Students: Overall, students liked the concept of *Kidz Bite Back* rating it higher than in previous years. More than half (68%) of the students reported eating a snack the previous day with the most common snack (46%) being recalled as a healthy snack. The majority (84%) students reported eating dinner last night with their family and 67% reported eating at the kitchen/dining room table. Students' perception of junk food, fast food, soft drink and video companies changed in Year 3 of the program. Students reported that fast food, soda, and television companies cared less for their health from pre- to post-survey showing the intended effect of the program. The students' perception of video game playing indicated that the students felt the companies cared slightly more for their health; however, this analysis was not statistically significant. The three-day recall of fast food intake, junk food intake, and soft drink intake showed statistically significant increases during Year 3. Additionally, previous day recall of video game and television hours showed statistically significant increases in Year 3.

Year 1 to Year 3 Changes: Based on average scores, principals ranked the overall *Kidz Bite Back* campaign as more positive each year (Year 1 M= 4.0; Year 2 M= 4.6; Year 3 M= 4.9). Although the principals felt that the program impact was less positive in academic achievement and social interaction from Year 1 to Year 2, both rebounded slightly in Year 3. The impact of the program on self-esteem of the students was also rated more positively each year (Year 1 M= 4.0; Year 2 M= 4.1; Year 3 M=4.4).

Based on average scores, teachers rated the impact of the program more positively in its impact on students' self esteem and social interactions with an overall rating of the program as being more positive each year of the program.

Parents ranking of how much soft drink companies care about the health of kids showed statistically significant changes from Year 1 to Year 2, representing that parents felt that soft drink companies cared less for the health of kids in Year 2. In Year 3 there were no statistically significant changes except in the ranking of television companies where the parents ranked them as more caring than in the previous year.

With regard to the program's impact on families, the children's involvement in the program was viewed by parents as having a much greater impact in Year 3 (72% in Year 3 responded with "yes" that it had impacted the families' eating habits as healthier, compared with 51% in Year 2; 68% in Year 3 responded with "yes" that it decreased the family television and video viewing hours, compared with 38% in Year 2). Education of the program by the children to the parents also increased in Year 3 to 79% from Year 2's 48%.

Students' previous day recall of video game playing, television viewing and three day recall of fast food intake, junk food intake, and soda intake remained steady or even increased from Year 1 to Year 2, however there was a decrease in all behaviors from Year 2 to Year 3.

In conclusion, all intervention groups rated *Kidz Bite Back* as being 'cool'. Teachers and Parents reported *Kidz Bite Back* to have increased students' academic achievement, social interaction and self-esteem. Year 3 of the program noted significantly greater parental impact with regards to reported behavior change in the home compared to the previous years.

Introduction

Obesity continues to prevail as one of the major health issues impacting children in the United States and abroad with no immediate signs of slowing. Overweight and obesity are growing problems worldwide in both developing and industrialized countries. Children are becoming more overweight with the physiological implications of being overweight of greatest concern. These additive effects will result in increased healthcare expenditure and may further perpetuate the healthcare crisis. Some of the potential physiologic consequences of overweight include, but are not limited to: type 2 diabetes, impaired glucose tolerance, heart disease, sleep apnea, high cholesterol and hypertension all of which have the propensity to become chronic conditions (Murnan, Price, Telljohann, Dake, & Boardley, 2006; Sharma, 2006). It is estimated that one third of all children born in the year 2000 will develop type 2 diabetes (Yin et al., 2005).

Obesity is garnering more attention in the public health, medical healthcare, and governmental sectors as the prevalence increases. This purported epidemiological trend carries with it chronic conditions that are estimated to be an enormous financial and healthcare burden. Strides are beginning to be made in bringing awareness to the community/individual about this impending crisis, but not to the magnitude that is warranted given the startling projected statistics.

There are concerns mounting over the increasing rates of child and adolescent overweight and obesity, and school settings are viewed as ideal locations to address obesity prevention in children (Foster et al., 2008). The *Kidz Bite Back*, a school-based program, is a three-year initiative that takes a multi-campaign, comprehensive approach using proven social marketing strategies along with child and parent empowerment to combat the rise in obesity.

Kidz Bite Back Description

Kidz Bite Back is a peer-to-peer, grassroots campaign that targets children in 4th and 5th grades. The *Kidz Bite Back* is a collaborative effort between St. Joseph's Children's Advocacy Center, dewey and associates, the Hillsborough and Pinellas County School Districts and County Health Departments. The external evaluation of the program was conducted by the University of South Florida, College of Public Health, under the direction of Dr. Kay Perrin.

Kidz Bite Back was launched in the Fall 2007 (Year 1) in 16 elementary schools (8 schools in Pinellas County and 8 schools in Hillsborough County). *Kidz Bite Back* in Year 3 (2009-2010) had 14 participating schools with 13 of them being the same participating schools as in Year 1 and Year 2.

Hillsborough County Schools	Pinellas County Schools
<ul style="list-style-type: none">• B.C. Graham Elementary• Cleveland Elementary• Dickenson Elementary• Thonotosassa Elementary• MOSI• Oak Park Elementary• Robles Elementary	<ul style="list-style-type: none">• Belcher Elementary• Curtis Fundamental• Gulfport Elementary• Highland Lakes Elementary• Orange Grove Elementary• Seminole Elementary• Palm Harbor Elementary

The targeted population included elementary school children in 4th and 5th grades, parents/guardians, teachers, and principals. In each of the 14 schools, *Kidz Bite Back* was implemented during the school year. Two counter-marketing campaigns (Big Fat Industries and Couch Potato Companies) were included in all three years to educate children on the effects of over-consumption of fast food, soft drinks, and junk food and the deleterious effects of sedentary behaviors such as watching television or playing video games. These campaigns were charged with an intended effect of changing children's opinions, attitudes, and behaviors related to over-consumption of fast food and participation in sedentary behaviors, with a strong focus on moderation. For Year 2 and Year 3, another component, *Dirt Ball*, was added to the mix to encourage physical activity. For the purpose of this evaluation report, the combined campaigns are called *Kidz Bite Back* with the understanding that the counter-marketing components are included. The average school time of campaign implementation was six months in Year 3.

Purpose

The purpose of the Tampa Bay initiative, *Kidz Bite Back*, was to educate and empower children using the multi-campaign approach of the *Kidz Bite Back* among 4th and 5th grade students who attend one of the participating schools in Hillsborough and Pinellas Counties, Florida. The comprehensive approach of the program seeks to:

- Promote and improve health literacy
- Track BMI changes (Year 1 only)
- Promote responsible health behavior
- Advocate and promote a more healthy lifestyle

More specifically, this study was designed to evaluate the following research questions. The research questions were then used to develop the survey questions used in the evaluation.

Research Questions:

1. Did students' awareness of the advertising techniques change?
2. Did students' opinions change about the companies (fast food, soft drink, junk food, television networks, and video games)?
3. Did students' self-report behavior change related to the products?
4. Did parent/guardian opinions of the change related to the products?
5. Did parent/guardian self-report behavior change related to the products?
6. Did parent/guardian report observing behavior change in their children in which they believe is related to program?
7. Did teachers' opinions change related to the companies?
8. Did teachers' self-report behavior change related to the companies?
9. Did teachers feel that *Kidz Bite Back* positively impacted students?
10. Did principals feel that *Kidz Bite Back* positively impacted students?

Conceptual Framework

Social Marketing was employed as the conceptual framework for the current study. Social marketing uses two key marketing principles to influence a select audience to voluntarily change their behavior for improving individual health. Because the social marketing approach focuses on health behavior change it was chosen as the framework and was selected in this study

to “create, communicate, and deliver value” to decrease the frequency of the high caloric foods/drinks and decrease the frequency of sedentary behaviors (Kotler, 2008).

The first key principle of social marketing is that it views the consumer (the 4th and 5th graders) at the center of understanding needs, wants, beliefs, problems, concerns, and behaviors.

A second key principle is that social marketing views the consumer at the center of a voluntary exchange process that involves 4 key concepts: the product (the protective behavior being promoted and the benefits it offers adopters); the price and other factors (social, emotional, and monetary costs exchanged for the product’s benefits and other factors that influence adoption); place (where the target behavior is practiced and partners (peers, families, teachers) that can support adoption); and promotion (communication strategies used to activate the intended audience (school-based summits). Table 1 summarizes the marketing mix for this study.

Table 1. Summary of Social Marketing Mix for This Study

Behavior of interest	Marketing Mix	Definition	Examples
Decreasing high caloric food/drink intake; decreasing sedentary behaviors	Product	The behavioral offer made to the priority adopters	Beliefs about fast food and TV/video game watching; the benefits of reducing consumption of high caloric foods/drinks; increasing activity
	Price	The costs to priority adopters and barriers they have to overcome	Barriers to improving health including beliefs, attitudes, time, money, and resources
	Place	Channels of change promotion; places where change is supported	Where the behavior will be practiced by the target market? Who/what can support the adoption of the behavior?
	Promotion	Communication means by which the change is promoted to the priority audience	Message strategies that can be used to facilitate the exchange of the behavior’s benefits with other factors that may deter adoption

Methods

The current program is modeled after the initial pilot program that was implemented in Broward and Palm Beach Counties in 2006. The 2006 pilot program was comprised of a non-experimental design using quantitative methodology (surveys). Results from the 2006 pilot study indicated a positive impact of the program with regard to changes in opinions and attitudes related to the consumption of high caloric foods/drinks.

The 3-year evaluation includes:

Year 1: 2007-2008

- a) Quasi-experimental study utilized purposive sampling of 4th and 5th grade students. Surveys were administered to the students, parents / guardians, teachers, and principals both prior to and at the end of the program campaign which was conducted during a school calendar year.
- b) The Body Mass Index (BMI) measurements were taken as a baseline.

Year 2: 2008-2009

- a) An evaluation of health insurance coverage was added to the Year 2 parent survey and recall for physical activity and eating habits were reduced from the past seven days to the past three days.
- b) Quasi-experimental study will utilize purposive sampling of a new 4th grade student group and the 5th grade students who were previously in 4th grade. Surveys will be administered to the students, parents / guardians, teachers, and principals both prior to and at the end of the program campaign which was conducted over a school calendar year.

Year 3: 2009-2010

- a) Quasi-experimental study will utilize purposive sampling of a new 4th grade student group (those who were previously in the 3rd grade and the 5th grade students who were previously in the 4th grade. Surveys will be administered to the students, parents / guardians, teachers, and principals both prior to and at the end of the program campaign was conducted over a school calendar year.

Participants

Recruitment of participants involved a collaborative effort between the schools, dewey and associates, and St. Joseph's Children's Advocacy Center. Eligible children were identified through a school advocate (teacher) who served as the liaison between the schools and the research and program teams. *Kidz Bite Back* is a completely voluntary program and participants were allowed to exit the program at any time during the school year. The school advocate remained as the primary school contact person for Year 3. Recruitment incentives for the school advocate will include a stipend and an end of the campaign luncheon to both thank them for their efforts and provide a platform for debriefing. Students received *Kidz Bite Back* promotional items for participation in the program.

Survey Instrument

A written survey was developed based on the research objectives and utilized social marketing as the conceptual framework. The surveys for the children were administered on computers in the media centers through Survey Monkey, an online survey administration website, during normal school hours. A proctor from St. Joseph's Children's Advocacy Center was stationed at each computer during survey administration to help children with accessing the survey. Teachers and principals were able to access the surveys through a link that was emailed directly to them. The parents / guardians were delivered a paper copy of the survey with the children's after-school paperwork. Year 3 post surveys can be found in the separate attached documents.

Procedure

Computer-based surveys, utilizing *Survey Monkey*, were administered by the research team during normal school hours in the media centers to the students, with teachers and principals having independent access through an emailed link. Parents / guardians received hard copy survey for completion and instructions to return the completed survey to the child's teacher. Incentives for the parents were provided.

This study was approved by the school districts of Hillsborough and Pinellas Counties. The evaluation of *Kidz Bite Back* was approved by the Institutional Review Board of the Division of Research and Integrity at the University of South Florida.

Data Analysis

Data collection was overseen by dewey and associates and was compiled through a collaborative effort between St. Joseph's Children's Advocacy Center and Hillsborough and Pinellas County Health Department. De-identified secondary data were given to the evaluation team for analysis. The data analysis was conducted by the University of South Florida, College of Public Health under the direction of Dr. Kay M. Perrin.

Results

The results for each respondent group are presented in the following order: principals, teachers, parents / guardians, and students. For each respondent group, the data analysis included a chi-square for categorical data, a t-test for pre-post survey questions, and correlations for continuous data to address the research questions. Unless noted in the narrative, there were no statistically significant differences between the pre-survey and the post-survey data for the each respondent group.

As noted throughout the narrative, there were a substantial number of adults (principals, teachers and parents) who did not respond to every question on the pre-survey as well as on the post-survey. The results reflect the responses provided. It should be noted that any generalizations are reduced due to the lack of complete data and low response rates. In addition, it should be noted with large sample sizes such as those found in the parent and student surveys, that a significant result does not necessary reflect a substantial effect size. Additionally, the comparison of means was by group versus individual comparisons.

A. Principals' Pre-Survey and Post-Survey Results

Demographics

Eight (8) principals in the 16 schools responded to and completed the pre-survey and the post-survey. For gender, there were 7 females and one male respondent in the pre and post-survey. For age, the most commonly reported category was 51-55 years of age, similar to last year's responses. The post-survey results showed no statistically significant differences for the demographics.

Personal Physical Fitness Habits

When asked about their fitness level in the post survey, three principals reported being in excellent physical condition, two principals in good condition, and two principals reported being in fair condition (1 non-respondent). The majority of principals engaged in physical exercise one to two times per week. When asked to report the number of hours that they watch television per day, the most common response was 1-3 hours with one principal reporting over six hours of television viewing. As for playing video games, most (88%) principals said that they never play video games.

Nutritional Habits

Most (63%) of the principals reported eating breakfast and 6 (86%) reported having eaten lunch the previous day. None of the principals reported whether they brought their lunch, ate school lunch or ordered out. However, four principals reported eating in the school cafeteria three to four times per week. Fifty percent of the principals reported there being vending machines in the teacher's lounge and 50% reported that there were soft drinks and junk food in the vending machines. In addition, four principals reported that bottled water was available in the vending machines.

As for eating fast food, three of the principals reported never eating fast food and four principals reported eating fast food 1-2 times within the past 3 days. For soft drink consumption in the past three days, one of the principals reported not drinking soft drinks, four principals drank 1-3 soft drinks, and two principal reported drinking seven or more soft drinks in the past three days. For junk food, three principals reported eating no junk food in the past three days, two principals reported eating junk food 1-3 times, and two principal reported eating junk food 7-9 times in the past three days. Lastly, when the principals were asked if the school administrative goals were related to wellness, one principal reported 'not much' and one principal reported 'a lot', with the remaining six principals reporting in between.

Ranking Companies: Level of Care about the Health of Kids

The principals were asked to rank how caring the following companies are toward the children's health in their marketing audience. The 5-point Likert scale was 1=don't care at all and 5=care a lot. Tables 2 and 3 and Graphs 1 and 2 summarize the results from Year 1, Year 2, and Year 3.

Table 2. Principals' Pre-Survey Response: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)

Category	Pre-Survey Mean Score Responses	Pre-Survey Mean Score Response	Pre-Survey Mean Score Responses
	Year1	Year 2	Year 3
Fast Food Companies	M = 3.0	M = 2.3	M = 2.3
Soft Drink Companies	M = 2.3	M = 1.8	M = 1.9
TV Networks	M = 3.7	M = 2.0	M = 2.3
Video Game Companies	M = 1.7	M = 1.8	M = 1.5

Graph 1. Principals' Pre-Survey Response: Summary of Ranking Companies about Level of Care about Health of Kids (Year 1, 2 and 3)

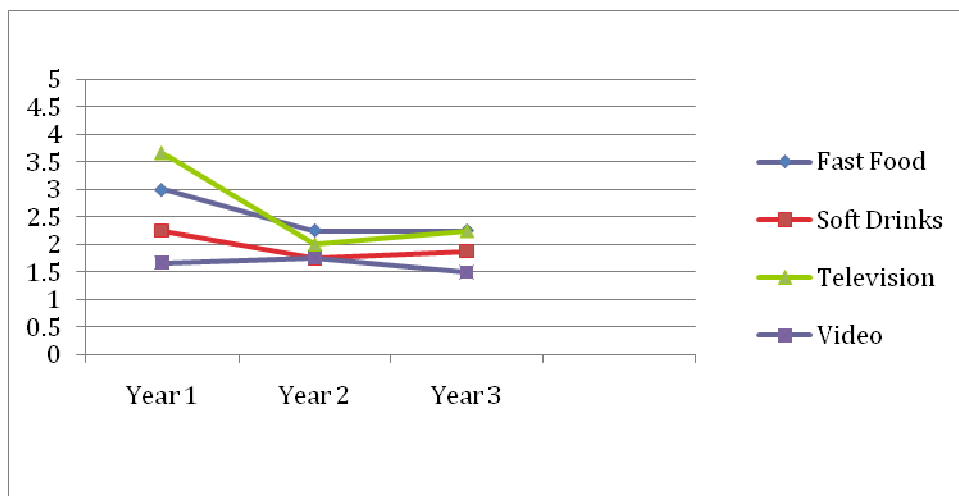
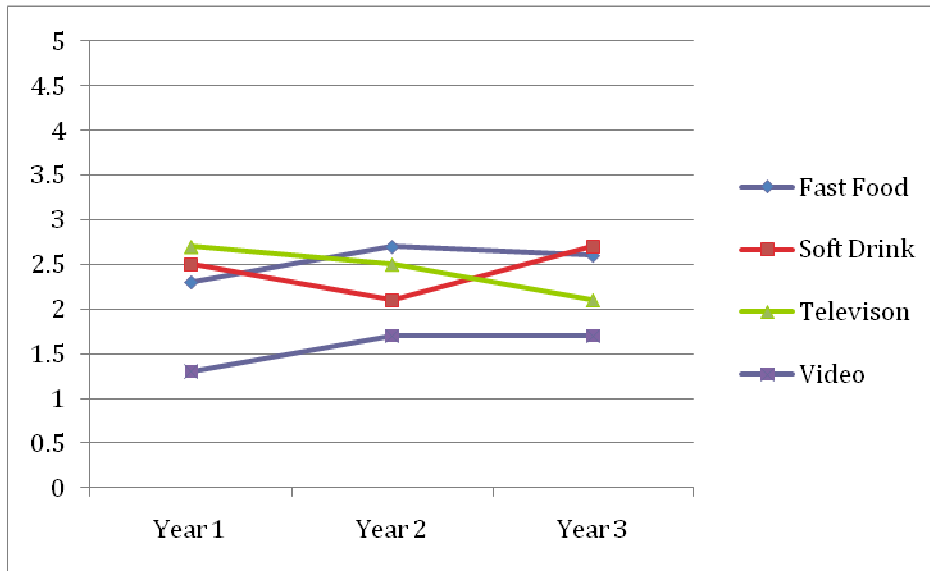


Table 3. Principals’ Post-Survey Response: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)

Category	Post-Survey Mean Score Responses	Post-Survey Mean Score Responses	Post-Survey Mean Score Responses
	Year 1	Year 2	Year 3
Fast Food Companies	M = 2.3	M = 2.7	M = 2.6
Soft Drink Companies	M = 2.5	M = 2.1	M = 2.7
TV Networks	M = 2.7	M = 2.5	M = 2.1
Video Game Companies	M = 1.3	M = 1.7	M = 1.7

Graph 2. Principals’ Post-Survey Response: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)



Impact of Kidz Bite Back

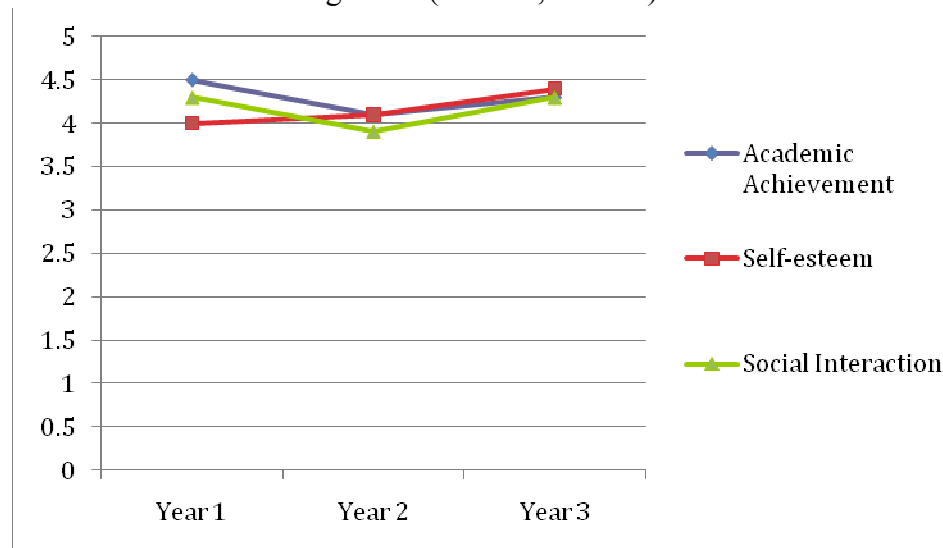
To better evaluate the response of the program, several questions were included in the post survey to gauge principals’ reaction to the program. Each question had a 5-point Likert scale for the response with 1=not much and 5=a lot. Table 4 and Graphs 3 and 4 shows the mean score for each question for all three years.

Table 4. Principals' Post-Survey: Summary of Impact of *Kidz Bite Back* (Years 1, 2 and 3)

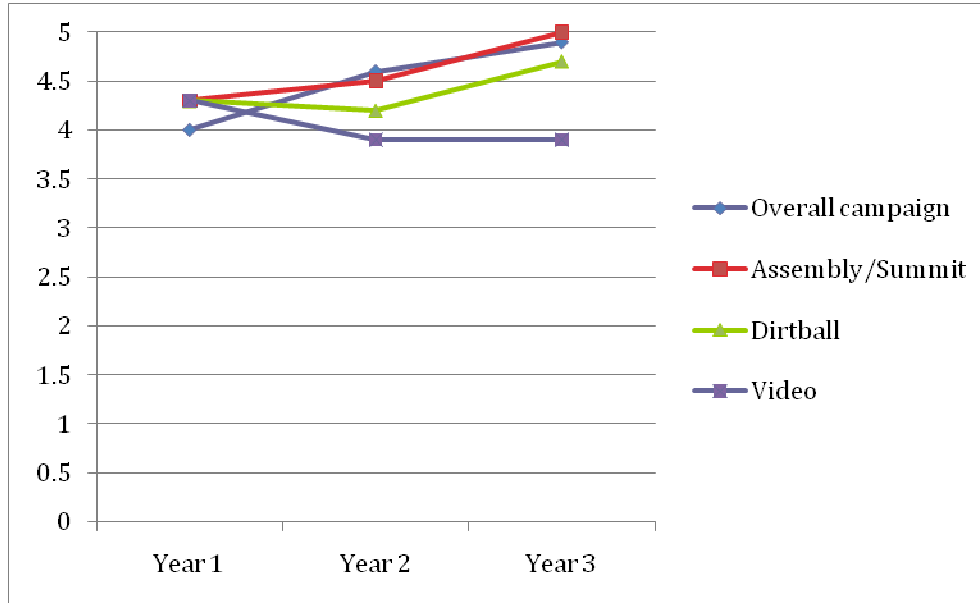
Question	Mean Score	Mean Score	Mean Score
To what extent did <i>Kidz Bite Back</i> positively impact:	Year 1	Year 2	Year 3
Academic achievement of the students in your school?	M = 4.5	M = 4.1	M = 4.3
Self esteem of the students in your school?	M = 4.0	M = 4.1	M = 4.4
Social interactions of the students in your school?	M = 4.3	M = 3.9	M = 4.3
How would you rate the <i>Kidz Bite Back</i> :			
Overall campaign?	M = 4.0	M = 4.6	M = 4.9
Assembly and Summit?	M = 4.3	M = 4.5	M = 5.0
Commercials?	M = 4.3	*	*
Dirt balls?	M = 4.3	M = 4.2	M = 4.7
Video Contest?	M = 4.3	M = 3.9	M = 3.9
How would you rate the performance of the Kidz Advocates?	M = 4.2	M = 4.5	M = 4.9
How would you rate communication between your school and the <i>Kidz Bite Back</i> ?	M = 4.4	M = 4.4	M = 4.7
Please rate the <i>Kidz Bite Back</i> on how cool it is.	M = 4.3	M = 4.6	M = 5.0

*This question was not included on Year 2 survey

Graph 3: Post-survey principal rating of the impact of KBB on self-esteem and social interaction of 4th and 5th graders (Years 1, 2 and 3)



Graph 4: Post-survey principal ranking of campaign components (Years 1,2 and 3).



B. Teachers' Pre-Survey and Post-Survey Results

Demographics

There were 81 teachers in 16 schools that responded to the survey. This represents an improvement in responses from Year 2. For gender, 18 (25%) were male and 53 (75%) were female, representing a slightly larger male representation than the previous two years. The two most commonly reported age categories were: 16 (23%) in 26-30 years of age category and 12 (17%) in the 31-35 years of age category, representing a slightly younger group from previous years. The post-survey results showed no statistically significant differences for the demographics.

Personal Physical Fitness Habits

When asked about their fitness level, 46 (65%) reported being in fair or good physical condition, with 28 (39%) reported being overweight or slightly overweight. Fifty-eight (75%) teachers engaged in some physical exercise 2-5 times per week, a much higher percentage from the previous year. Using t-test for comparing pre and post-survey results on physical activity engagement in the past 3 days, there was no statistically significant change in Year 3, however the mean score did increase from 2.9 to 3.3, indicating a slight improvement in physical activity. When asked to report the number of hours spent watching television, the most common response was 2 hours, similar to the Year 2 responses. Five percent of the teachers reported watching television for five or more hours per day. As for playing video games, most (94%) teachers reported not playing any video games.

Nutritional Habits

The majority (83%) of the teachers reported normally eating breakfast and (94%) reported having eaten lunch the previous day. Of those who ate lunch, 44 (83%) brought their lunch and 6 (11%) ate the school cafeteria lunch. Seventy-one percent do not eat any of their lunch meals in the school cafeteria.

The majority (88%) of teachers reported that there are vending machines in the teacher's lounge and 38 (78%) reported that there were soft drinks and junk food in the vending machines. In addition, 46 (98%) reported that bottled water was available in the vending machines. These results remain consistent from previous years.

As for eating fast food, 36 (64%) of the teachers stated that they never ate fast food in the past three days representing a decrease in reported fast food consumption among teachers from Year 2 to Year 3. An additional 17 (30%) recalled eating fast food only one time in the past three days. Reported soft drink consumption also decreased from Year 2 to Year 3 with 27 (48%) of the teachers reported not drinking soft drinks and 18 (32%) recalled drinking 1-3 soft drinks in the past three days. It should be noted that 3 (5%) recalled drinking 10 or more soft drinks in the past three days. For junk food consumption, 33 (60%) of the teachers reported eating junk food 1-3 times in the past three days representing similar results from the previous year.

Lastly, on a scale of 1 to 5 (where 1 represents not much and 5 represents a lot), the teachers were asked how much they incorporate physical activity and/or nutrition into their curriculum. The two most frequent responses were 14 (23%) teachers responding with a 2 and 27 (44%) responding with a 3.

Ranking Companies: Level of Care about the Health of Kids

The teachers were asked to rank how caring the following companies are toward the children in their marketing audience. The 5-point Likert rating scale was 1=don't care at all and 5=care a lot. For fast food companies, 42 (75%) teachers rated caring as low. For the soft drink companies, 79 (91%) teachers rated caring as low. For the TV networks, 45 (71%) teachers gave a poor rating and for video game companies, 56 (82%) teachers felt video companies poorly cared for the health of kids. Tables 5 and 6 and Graphs 5 and 6 summarize the results from Year 1, Year 2, and Year 3.

Table 5. Teachers’ Pre-Survey: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)

Category	Pre-Survey Mean Score Responses	Pre-Survey Mean Score Responses	Pre-Survey Mean Score Responses
	Year 1	Year 2	Year 3
Fast Food Companies	M = 2.3	M = 2.1	M = 2.3
Soft Drink Companies	M = 2.0	M = 1.7	M = 1.7
TV Networks	M = 2.9	M = 2.1	M = 2.1
Video Game Companies	M = 1.8	M = 1.5	M = 1.8

Graph 5: Teachers’ Pre-Survey: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)

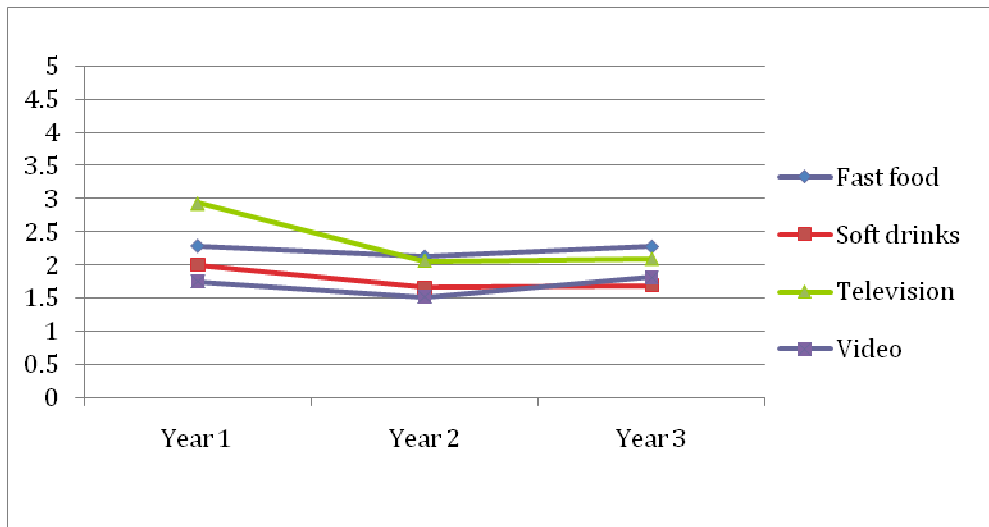
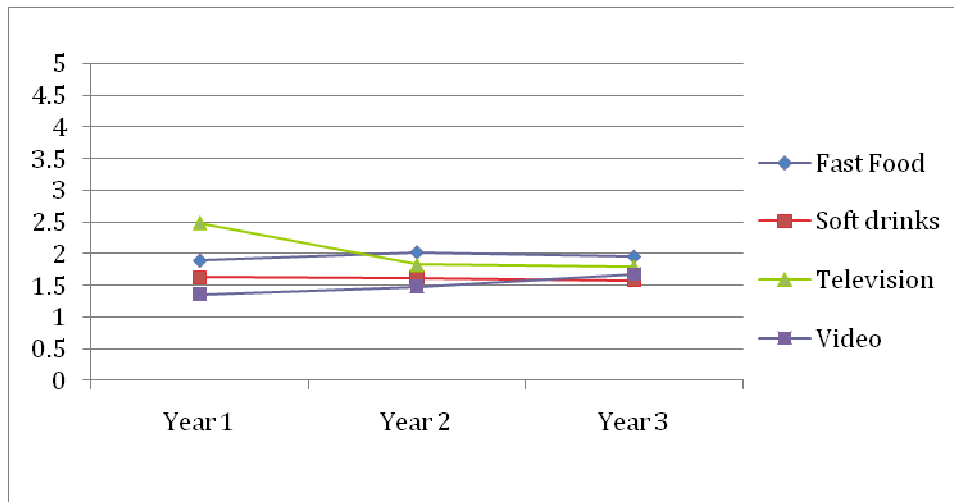


Table 6. Teachers’ Post-Survey: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)

Category	Post-Survey Mean Score Responses	Post-Survey Mean Score Responses	Post-Survey Mean Score Responses
	Year 1	Year 2	Year 3
Fast Food Companies	M = 1.9	M = 2.0	M = 2.0
Soft Drink Companies	M = 1.6	M = 1.6	M = 1.6
TV Networks	M = 2.5	M = 1.8	M = 1.8
Video Game Companies	M = 1.4	M = 1.5	M = 1.7

Graph 6. Teachers’ Post-Survey: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)



Impact of Kidz Bite Back

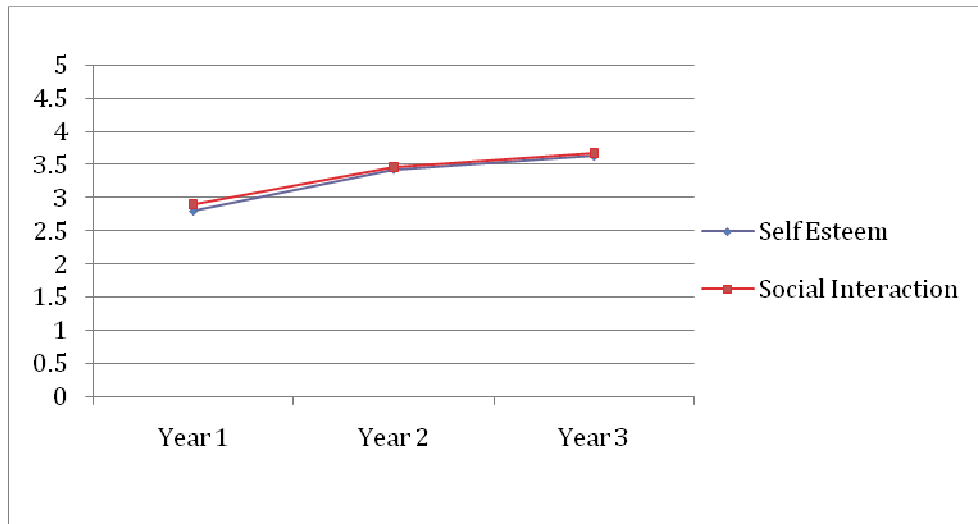
Several questions were added to the post-survey related to the impact of the *Kidz Bite Back*. Approximately fifty teachers responded. Each question had a 5-point Likert scale for the response with 1=not much and 5=a lot. Table 7 along with Graphs 7 and 8 shows the mean score for each question.

Table 7. Teachers’ Post-Survey: Summary of Impact of *Kidz Bite Back* (Years 1, 2 and 3)

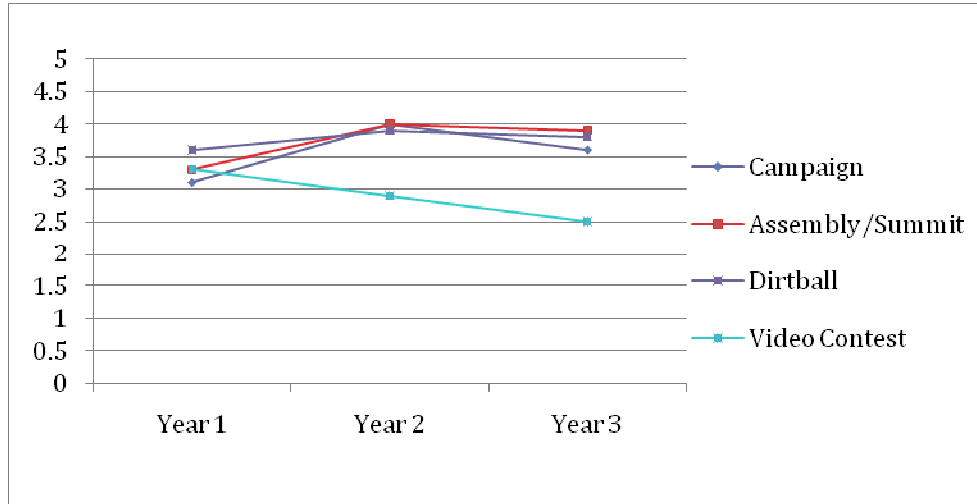
Question	Mean Score	Mean Score	Mean Score
	Year 1	Year 2	Year 3
To what extent did the <i>Kidz Bite Back</i> positively impact:			
Self esteem of the students in your school?	M = 2.8	M = 3.4	M = 3.6
Social interactions of the students in your school?	M = 2.9	M = 3.5	M = 3.7
How would you rate the <i>Kidz Bite Back</i> :			
Overall campaign?	M = 3.1	M = 4.0	M = 3.6
Assembly and Summit?	M = 3.3	M = 4.0	M = 3.9
Commercials?	M = 3.6	M = 3.6	*
Dirt balls?	M = 3.6	M = 3.9	M = 3.8
Video Contest?	M = 3.3	M = 2.9	M = 2.5
How would you rate the performance of the Kidz Advocates?	M = 3.9	M = 4.2	M = 3.7
How would you rate communication between your school and the <i>Kidz Bite Back</i> ?	M = 2.5	M = 3.9	M = 3.9
Please rate the <i>Kidz Bite Back</i> on how cool it is.	M = 3.9	M = 4.0	M = 4.0

*This was not asked in Year 3

Graph 7: Post-survey teacher rating of the impact of KBB on self-esteem and social interaction of 4th and 5th graders (Years 1,2 and 3)



Graph 8: Post-survey teacher ranking of campaign components (Years 1, 2 and 3)



C. Parent / Guardians' Pre- Survey and Post-Survey Results

Demographics

For the pre-survey, 1043 parents /guardians from 14 schools responded to the pre-survey, while 1513 parents from 14 schools responded to the post-survey. Of the respondents, 83% were mothers and 12% were fathers. The respondents reported that 69% of the households had two parents, consistent with Year 2 results. For age, the two most commonly reported categories were 31-40 years of age (46%) followed by 41-50 years of age (39%). The post-survey results showed no statistically significant differences for the demographics.

Personal Physical Fitness Habits

When asked about their fitness level, 564 parents (39%) reported being in fair physical condition, 616 (43%) in good physical condition, and 145 (10%) in excellent physical condition, representing a similar spread as last year's reported results. With regards to reported weight, there were 1009 (70%) parents that reported being of average weight, 387 (27%) reported being overweight and 52 (4%) reported being underweight. Over half of the parents reported engaging in physical activity at least three times in the past three days.

When asked to report the number of hours that the parents watch television per day, the most common response (35%) was two hours with the second highest response being one hour (27%), however, 42 (3%) stated that watching television for six or more hours each day. As for playing video games, most (84%) parents said that they never play video games, a slight increase from last year.

Personal Nutritional Habits

In recall from the past three days, 55% of the parents reported not eating any fast food, with 31% having reported eating fast food one time in the past three days. In the past three days 70% reported eating snack food 1-3 days and 45% reported drinking 1-3 soft drinks, consistent

with Year 2 results. Interestingly, 54 parents (3%) reported drinking greater than seven soft drinks in the last three days. The survey did not define the ounces in each soft drink.

Nutritional Habits of Their Children

When the parents / guardians were asked to estimate their child’s weight, most commonly reported weight ranged between 61-90 pounds. However, there were 64 (4%) children in the 121-130 pound range, 39 (2%) children in the 131-140 pound range. Unlike Year 2, there was no reported estimated weight of the child over 140 pounds in Year 3. Most (81%) of the parents reported having control over their children’s diet and most (70%) parents reported having control over their children’s daily physical activity. In addition, 84% of parents were satisfied or very satisfied with their child’s amount of physical exercise during school, representing an increase from last year, with 63% reporting ‘satisfied okay’ and 21% reporting ‘very satisfied’.

Parental Habits and Child’s Habits

Using the Pearson Correlation test statistic, there were several statistically significant findings between parental and child relationships and behavioral habits in Year 3. All three years are represented in the table below. The data showed the child’s weight was positively correlated to the number of hours that the parent/child watched television and to the parent’s weight. Meaning that as one variable increased so did the other (ex. As parent’s television viewing increased, child’s weight increased). Also, there were a few negative correlations: a) as the parent’s level of fitness increased, the parent’s and the child’s weight decreased; b) as the parent’s age increased, the number of hours that the child watched television decreased; and c) as the parent’s weight increased the parent’s physical fitness decreased. A summary of findings is located in Table 8 for Years 1, 2 and 3.

Table 8: Summary Between Parental and Child Relationships and Behavioral Habits (Year 1, 2 and 3)

Parent Variable / Child Variable	Pearson Correlation Year 1	Statistical Significance Year 1	Year 2	Statistical Significance Year 2	Year 3	Statistical Significance Year 3
Hours that parents watch TV / Child’s weight	+.132	n = 1108; p < .001*	+.114	n = 1113; p = .000*	+.008	n=1443 .001*
Hours that parents watch TV / Hours that	+.627	n = 1112; p < .001*	+.650	n = 1111; p = .000*	.000	n=1443 .996

child watches TV						
Hours that child watches TV / Child's weight	+0.117	n = 1115; p < .001*	+0.183	n = 1120; p = .000*	+0.156	n = 1418 p = <.001*
Hours that parents play video games / Hours that child plays video games	+0.548	n = 1120; p < .001*	+0.531	n = 1118; p = .000*	+0.035	n = 559 p = .403
Parent's level of fitness / Child's weight	-0.157	n = 1118; p < .001*	-0.108	n = 1119; p = .000*	-0.109	n = 1420 P = < .001*
Parents weight / Child's weight	+0.260	n = 1113; p < .001*	-0.002	n = 1120; p = .959	+0.169	n = 1422 p = <.001*
Parents age / Hours that child watches TV	-0.122	n = 1110; p < .001*	-0.097	n = 1122; p = .001*	-0.076	n = 1439 p = .004*
Parents weight / Parents fitness	-0.413	n = 1121; p < .001*	-0.005	n = 1121; p = .861	-0.441	n = 1438 p = <.001*

*p value of less than .05 indicates statistically significant results

Ranking Companies: Level of Care about the Health of Kids

The parents were asked to rank how caring the following companies are toward the children in their marketing audience. The 5-point Likert scale was 1=don't care at all and 5=care a lot. Tables 9 and 10 and Graphs 9 and 10 summarize the results from Years 1, 2 and 3.

Table 9. Parents' Pre-Survey : Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)

Category	Pre-Survey Mean Score	Pre-Survey Mean Score	Pre-Survey Mean Score
	Year 1	Year 2	Year 3
Fast Food Companies	M = 1.8	M = 1.9	M = 2.0
Snack Food Companies	M = 1.9	M = 2.0	M = 2.0
Soft Drink Companies	M = 1.5	M = 1.7	M = 1.6
TV Networks	M = 2.8	M = 2.1	M = 2.9
Video Game Companies	M = 1.6	M = 1.7	M = 1.7

Graph 9: Parents' Pre-Survey: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)

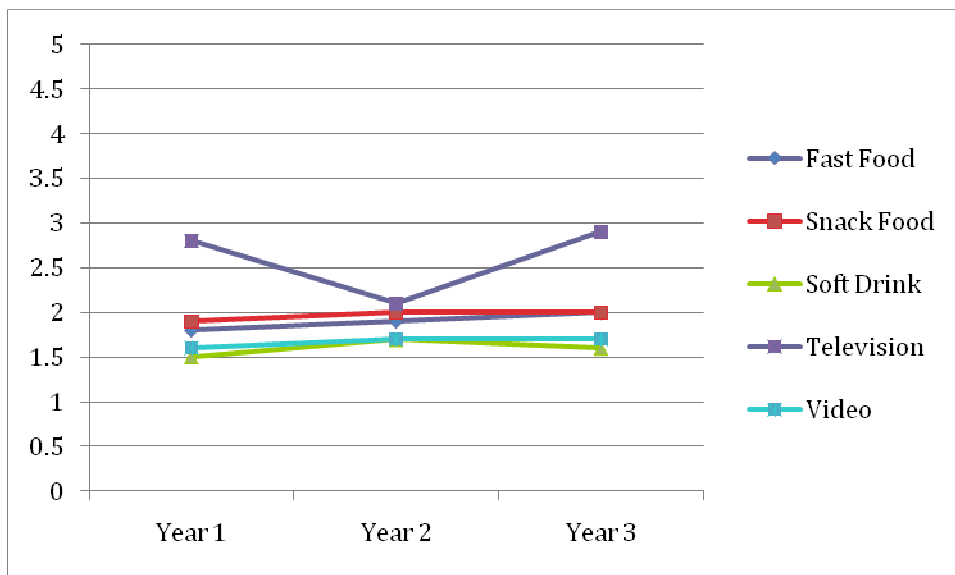
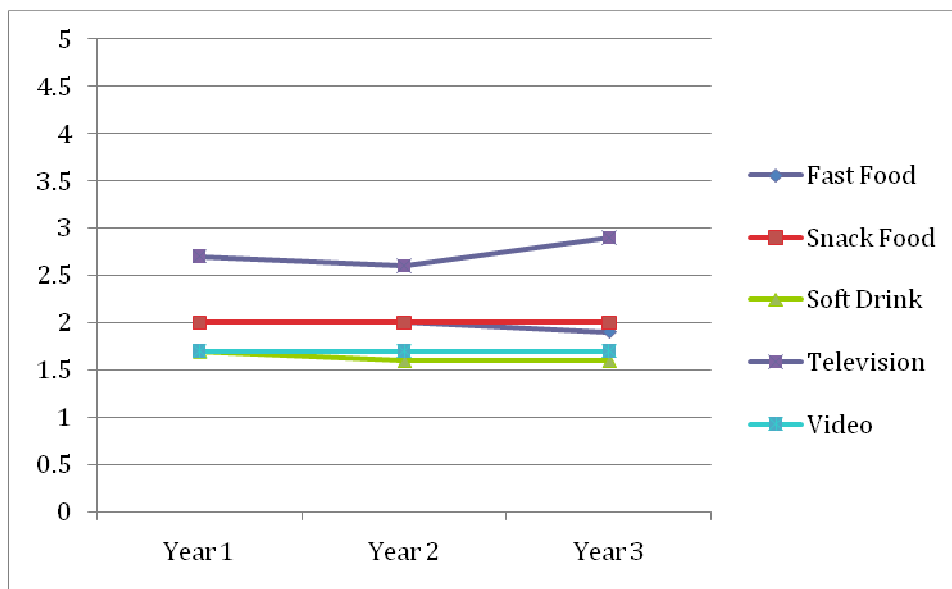


Table 10. Parents' Post-Survey: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)

Category	Post-Survey Mean Score	Post-Survey Mean Score	Post-Survey Mean Score
	Year 1	Year 2	Year 3
Fast Food Companies	M = 2.0	M = 2.0	M = 1.9
Snack Food Companies	M = 2.0	M = 2.0	M = 2.0
Soft Drink Companies	M = 1.7	M = 1.6	M = 1.6
TV Networks	M = 2.7	M = 2.6	M = 2.9
Video Game Companies	M = 1.7	M = 1.7	M = 1.7

Graph 10. Parents' Post-Survey: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)



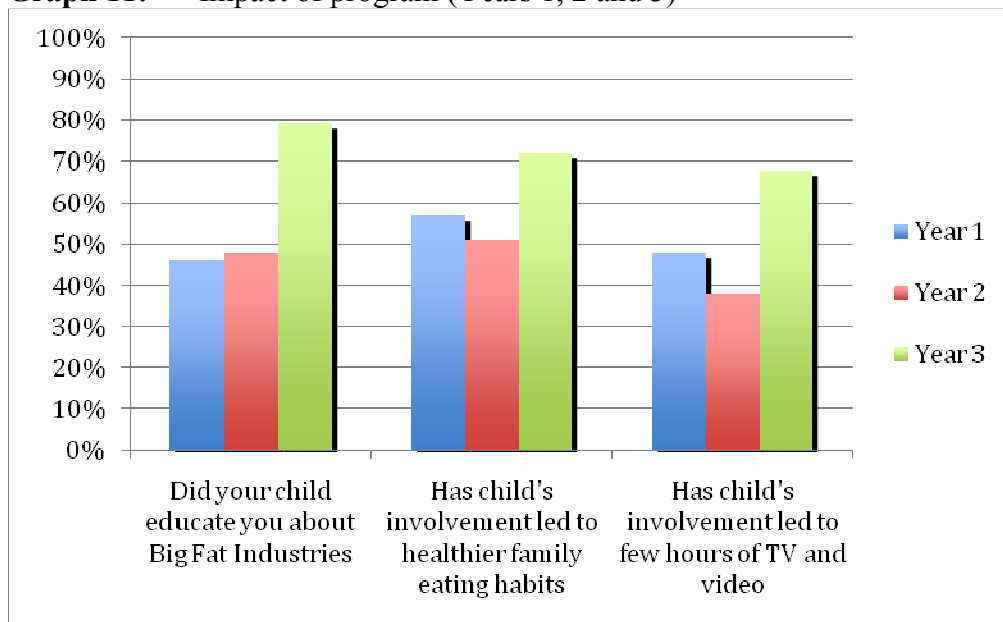
Impact of Kidz Bite Back

To evaluate the impact of the program on home education and behaviors, several questions asked the parents to respond to the effects the program has had on dietary intake and sedentary behaviors. Table 11 and Graph 11 summarize the responses for each question for Years 1, 2 and 3.

Table 11. Parents' Post-Survey: Summary of Impact of *Kidz Bite Back* (Years 1, 2 and 3)

Question	Responses Year 1	Year 1 (n)	Responses Year 2	Year 2 (n)	Responses Year 3	Year 3 (n)
Did your child educate you about the Big Fat Industries?	Yes =46%	161	Yes =48%	502	Yes =79%	1143
	No =54%	190	No =52%	549	No =21%	303
Has your child's involvement led to healthier eating family habits?	Yes =57%	203	Yes =51%	537	Yes =72%	1020
	No = 43%	151	No =49%	513	No =28%	401
Has your child's involvement led to few hours of watching television and playing video games?	Yes =48%	170	Yes =38%	406	Yes =68%	972
	No = 52%	186	No =62%	652	No =32%	449

Graph 11: Impact of program (Years 1, 2 and 3)



D. Students' Pre-Survey and Post-Survey Results

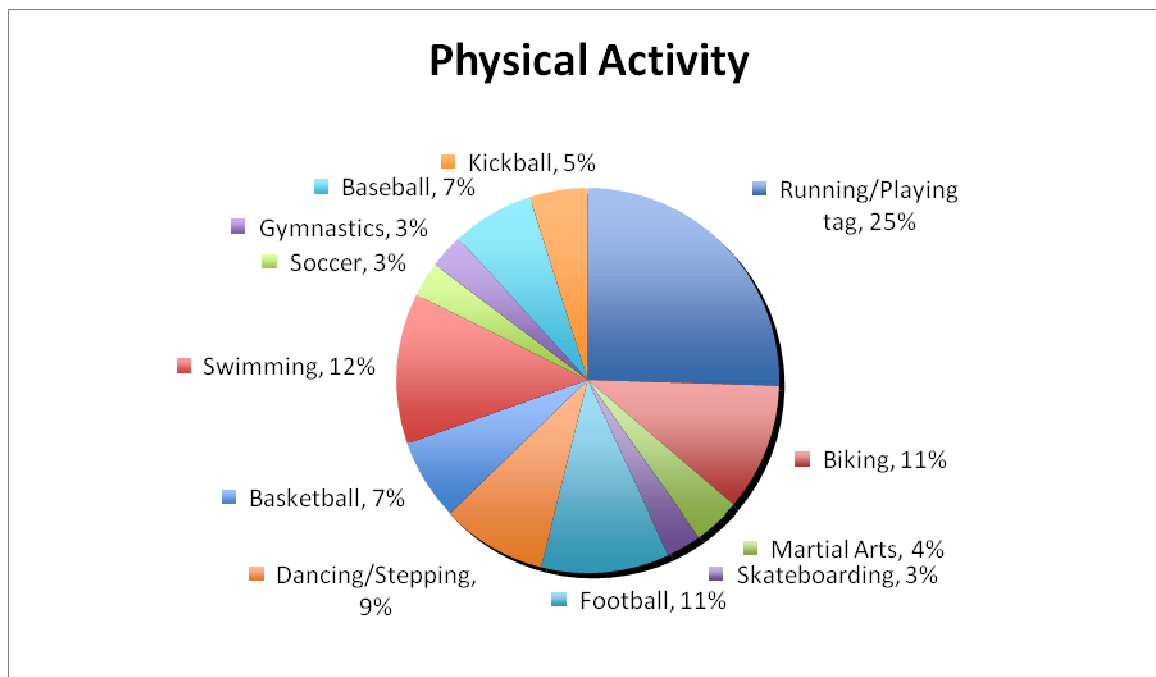
Demographics

There were 3136 students in 14 schools who responded to the pre-survey and 1610 students who responded to the post-survey. For gender, 50% were male and 50% were female. Ten years (43%) was the most commonly reported age.

Personal Activities

When asked about their after school activity, 1303 (83%) students reported being involved in some physical activity after school with the most commonly reported activity being running/playing tag (26%) followed by swimming (13%), football (11%) and biking (11%). Year 3 change was noted in swimming ranking among the top three activities. There was no change in physical activity recall from the pre survey to the post survey in Year 3. Graph 12 illustrates the reported physical activities of the students.

Graph 12: Type of physical activity reported among 4th and 5th graders after school the previous day



With regards to television hours reported in the previous day, it should be noted that 151 (12%) of the students reported watching television over 6 hours per day and 62 (10%) of the

students reported playing video games over 6 hours per day. 80% of children recalled watching television the previous day. These results are consistent with data from Year 2. Using t-tests, statistically significant results in video game and television watching recall from the previous day were noted in Year 3. It should be noted that although these results were statistically significant, no appreciable effect may be noted with the large sample size.

Table 12 summarizes the students' activities using t-tests to evaluate for statistically significant differences between the pre-survey and the post-survey for Year 1. Table 13 represents the results from Year 2. Because of the change in recall time frame of the questions in Year 2 (7 day recall), a separate table is provided for each year's results. Table 14 and Graph 13 represent the results from Year 3. Graphs 14 and 15 summarize the change over the three years in the pre and post-surveys.

Table 12. Students' Pre-Survey and Post-Survey: Summary of Recent Activities and Food Consumption (Year 1 only)

Survey Question	Pre-Survey Mean Score	Post-Survey Mean Score	Statistical Significance
How many hours of TV did you watch after school yesterday?	M = 2.5	M = 2.4	p = .170
On average, how many hours per day do you watch TV shows?	M = 2.5	M = 3.4	p < .001*
How many hours did you play video games for after school?	M = 2.5	M = 2.3	p = .117
On average, how many hours per day do you play video games (like Nintendo, Wii and X-Box)?	M = 1.5	M = 2.5	p < .001*
In the past seven days, how many times have you eaten fast food (like McDonalds, Burger King and Taco Bell)?	M = 1.2	M = 2.0	p < .001*
In the past seven days, how many soft drinks (like Pepsi, Coke and Mountain Dew) have you consumed?	M = 1.4	M = 2.2	p < .001*
In the past seven days, how many times have you eaten junk food (like Oreos, M&Ms and chips)?	M = 2.4	M = 2.0	p < .001*

*p value of < .05 indicates statistically significant results

Table 13. Students' Pre-Survey and Post-Survey: Summary of Recent Activities and Food Consumption (Year 2 only)

Survey Question	Pre-Survey Mean Score	Post-Survey Mean Score	Statistical Significance
How many hours of TV did you watch yesterday (from the time you woke up to the time you went to bed)?	M = 2.6	M = 2.7	p = .942
How many hours did you play video games yesterday after school (from the time you woke up to the time you went to bed)?	M = 2.3	M = 2.2	p = .036*
In the past three days, how many times have you eaten fast food (like McDonalds, Burger King and Taco Bell)?	M = 1.9	M = 1.8	p = .006*
In the past three days, how many soft drinks (like Pepsi, Coke and Mountain Dew) have you consumed?	M = 2.1	M = 2.1	p = .740
In the past three days, how many times have you eaten junk food (like Oreos, M&Ms and chips)?	M = 2.2	M = 2.2	p = .607

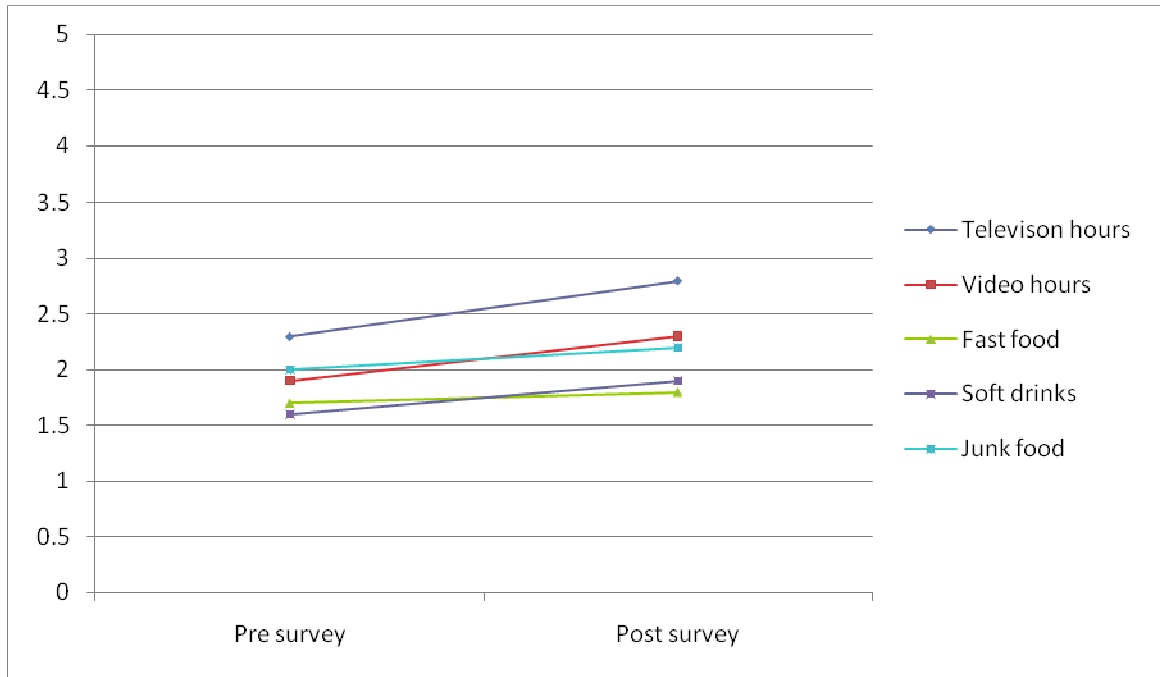
*p value of < .05 indicates statistically significant results

Table 14: Students' Pre-Survey and Post-Survey: Summary of Recent Activities and Food Consumption (Year 3 only)

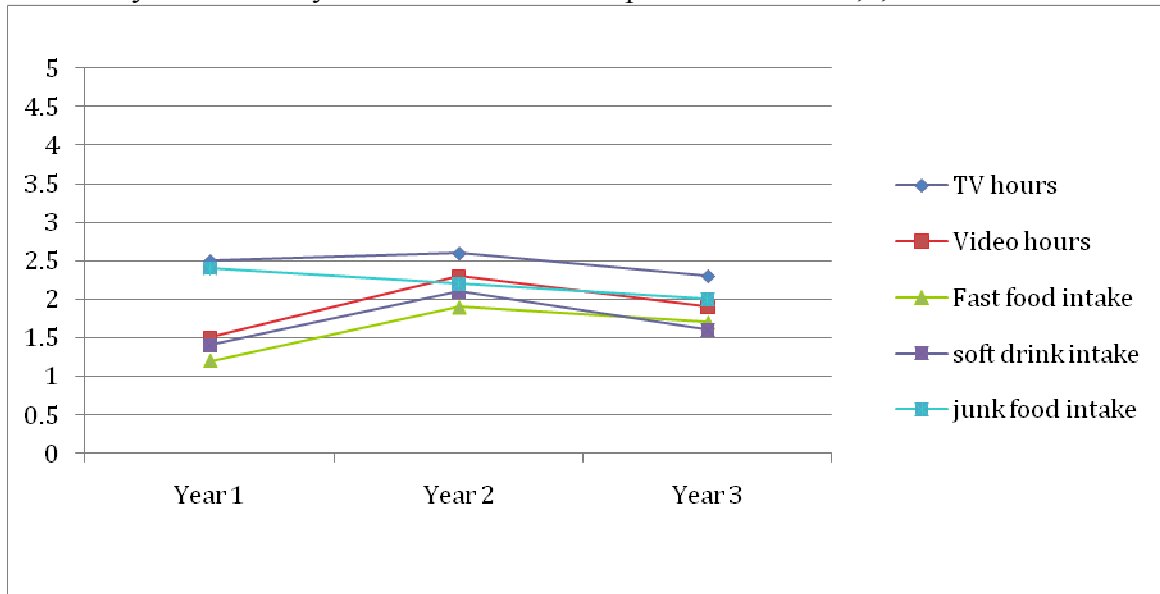
Survey Question	Pre-Survey Mean Score	Post-Survey Mean Score	Statistical Significance
How many hours of TV did you watch yesterday (from the time you woke up to the time you went to bed)?	M = 2.3	M = 2.8	p = <.000*
How many hours did you play video games yesterday after school (from the time you woke up to the time you went to bed)?	M = 1.9	M = 2.3	p = .008*
In the past three days, how many times have you eaten fast food (like McDonalds, Burger King and Taco Bell)?	M = 1.7	M = 1.8	p = .001*
In the past three days, how many soft drinks (like Pepsi, Coke and Mountain Dew) have you consumed?	M = 1.6	M = 1.9	p = <.000*
In the past three days, how many times have you eaten junk food (like Oreos, M&Ms and chips)?	M = 2.0	M = 2.2	p = <.000*

*p value of < .05 indicates statistically significant results

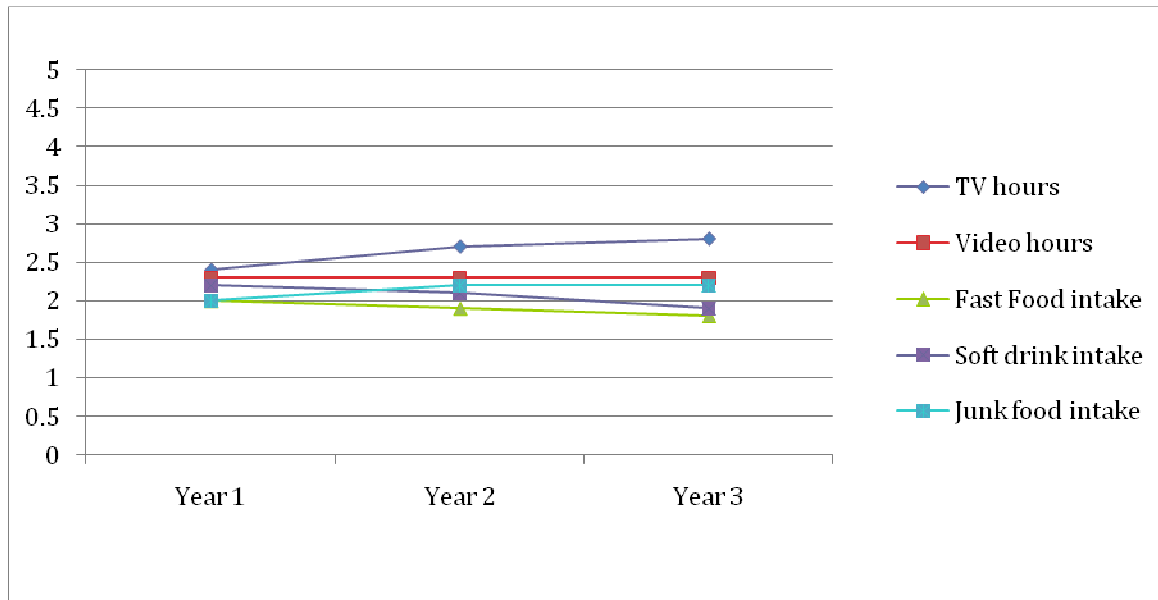
Graph 13: Year 3 Pre-survey to Post-survey results of student activities and food consumption recall from the previous day for activity and three day recall for food consumption



Graph 14: Pre-survey results of activities and food consumption recall from the previous day for activity and three day recall for food consumption from Year 1,2,3



Graph 15: Post Survey results for activity recall for the previous day and three day recall for Years 1, 2 and 3

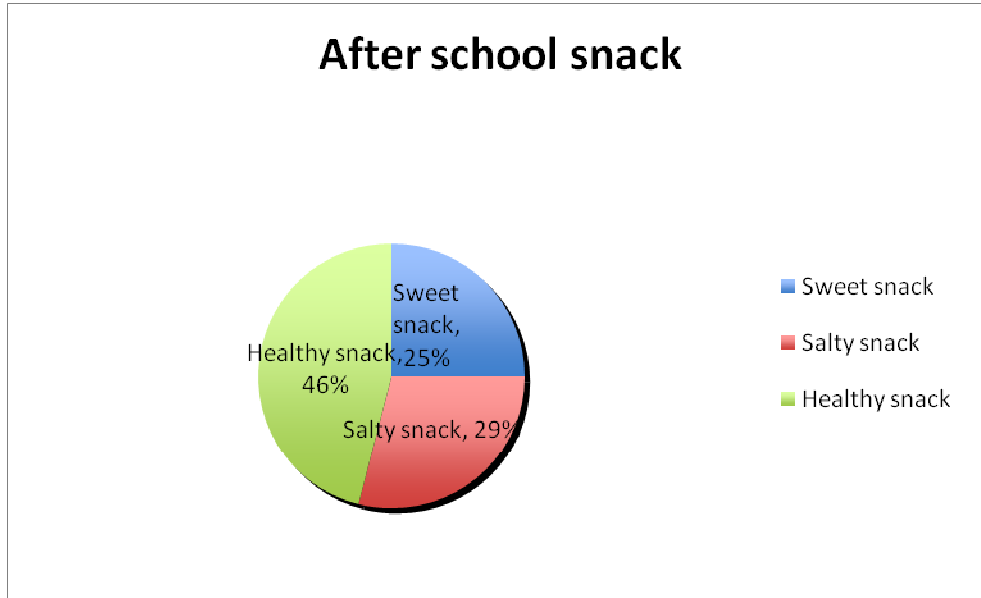


Nutritional Habits

The majority (85%) of the students reported eating breakfast and 62% reported having eaten breakfast at home, representing similar results as noted in Year 2. Of the 94% of students who reported eating lunch, 76% ate the school cafeteria lunch and 24% brought their lunch to school. More than half (68%) of the students reported eating a snack the previous day with the most common snack (46%) being recalled as a healthy snack as represented in Graph 16. The majority (84%) students reported eating dinner last night with their family and 67% reported eating at the kitchen/dining room table. It should be noted that 193 (13%) of the children ate their dinner in front of the television. Less than half (46%) of the students reported eating a snack after dinner.

As for eating fast food, 46% of the students reported that they did not eat fast food in the past three days, while 38% reported eating fast food 1-2 times in the past three days, mirroring Year 2 data. For soft drinks, 45% of the students reported consuming soft drinks 1-3 soft drinks in the past three days, but it should be noted that 87 (6%) reported consuming greater than 6 soft drinks in the past three days. This is a small decline in overconsumption from the previous year's 10%. For junk food, 56% of the students reported eating junk food 1-3 times in the past three days.

Graph 16: Type of snack eaten after school as reported by children (Year 3)



Ranking Companies: Level of Care about the Health of Kids

The students were asked to rank how much the following companies care about their health. It is important to note that the program goals were not to vilify the companies, but rather encourage kids to consume in moderation. The 5-point rating scale was 1=don't care at all and 5=care a lot. Tables 15 and 16 and Graphs 17 and 18 summarize the survey results from Years 1, 2 and 3.

Table 15. Students' Pre-Survey: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)

Category	Pre-Survey Mean Score Responses	Pre-Survey Mean Score Responses	Pre-Survey Mean Score Responses
	Year 1	Year 2	Year 3
Fast Food Companies	M = 2.3	M = 2.3	M = 2.3
Soft Drink Companies	M = 3.0	M = 2.3	M =2.2
TV Networks	M = 2.2	M = 2.3	M =2.6
Video Game Companies	M = 1.1	M = 2.0	M =2.2

Graph 17: Pre survey trend of Kid’s impression of companies caring for their health (Years 1, 2 and 3)

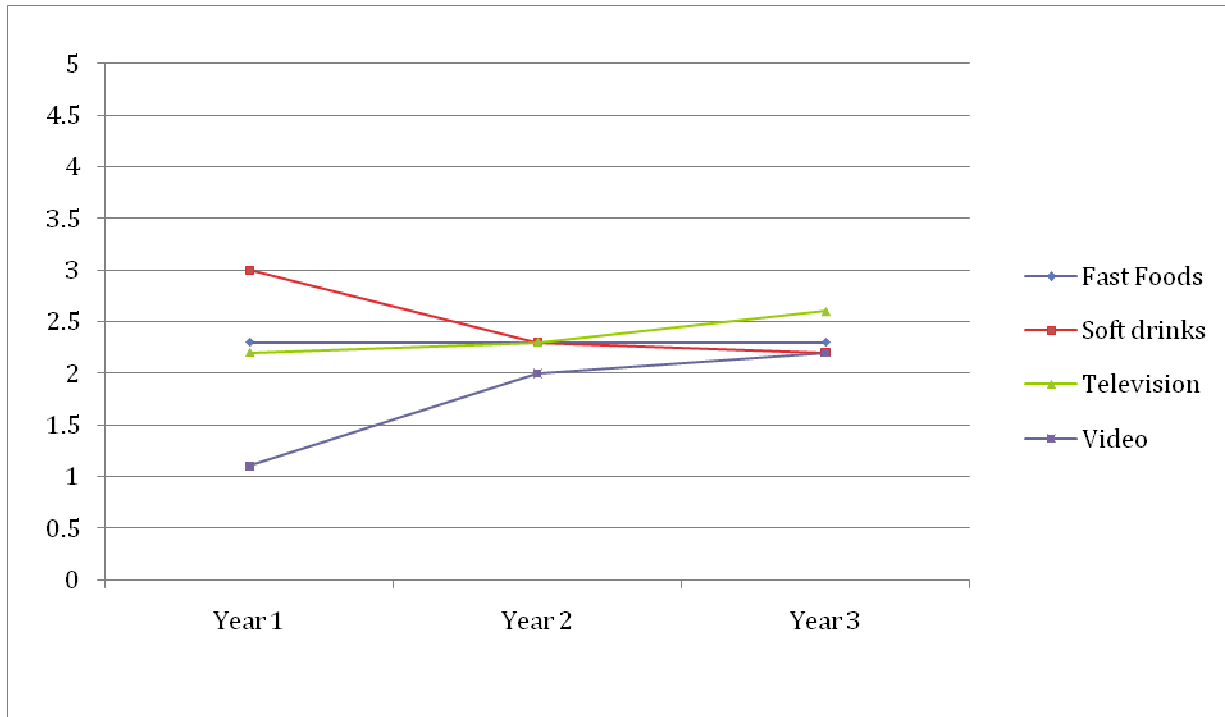
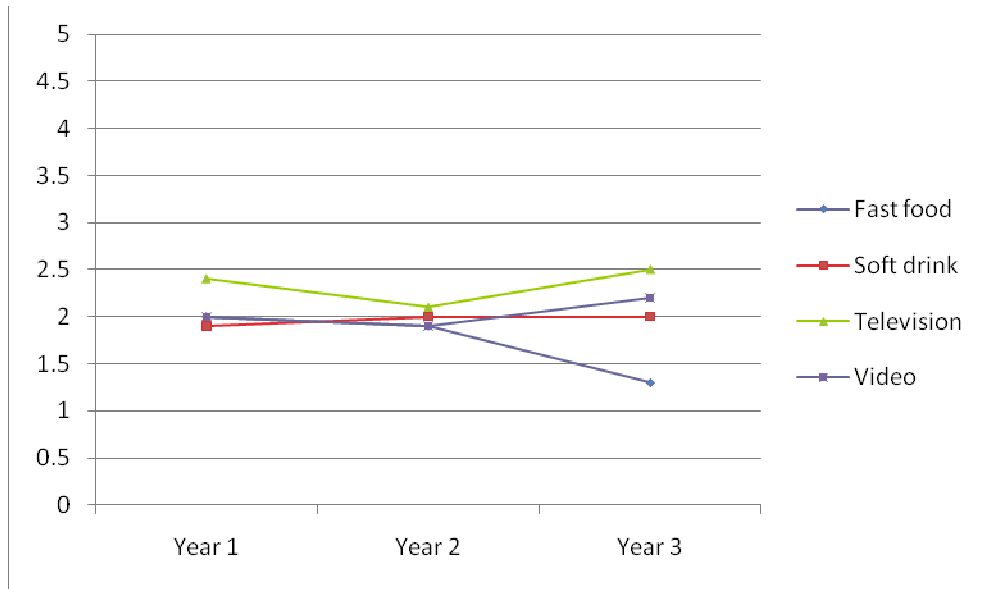


Table 16. Students’ Post-Survey: Summary of Ranking Companies about Level of Care about Health of Kids (Years 1, 2 and 3)

Category	Post-Survey Mean Score Responses	Post-Survey Mean Score Responses	Post-Survey Mean Score Responses
	Year 1	Year 2	Year 3
Fast Food Companies	M = 2.0	M = 1.9	M = 1.3
Soft Drink Companies	M = 1.9	M = 2.0	M = 2.0
TV Networks	M = 2.4	M = 2.1	M = 2.5
Video Game Companies	M = 2.0	M = 1.9	M = 2.2

Graph 18: Students’ Post-survey ranking of companies caring for the health of kids (Years 1, 2 and 3)



Impact of Kidz Bite Back

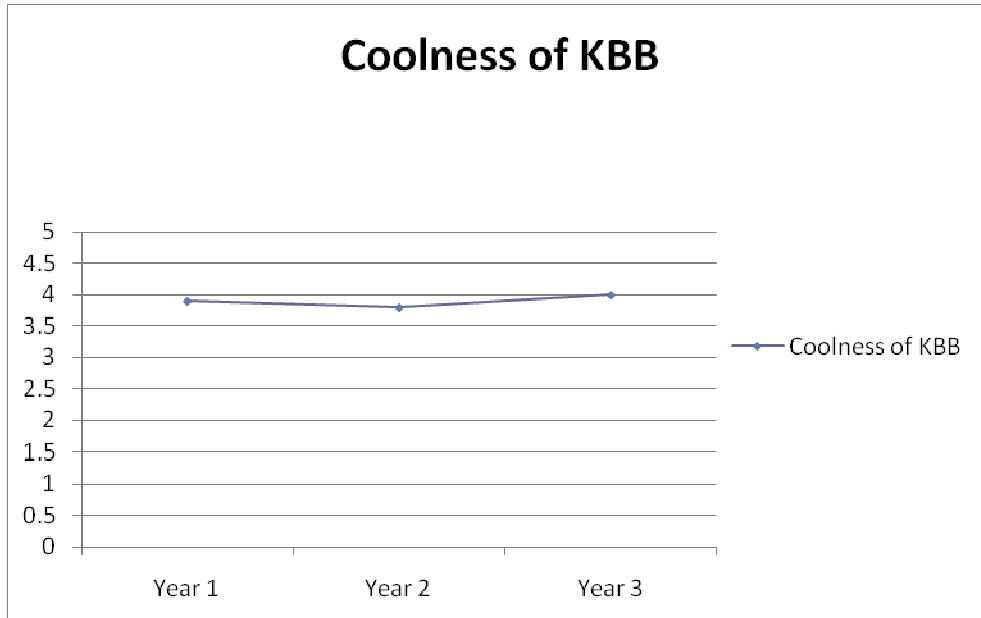
There were several questions added to the post-survey related to the impact of *Kidz Bite Back*. The first question had a 5-point Likert scale for the response with 1=not much and 5=a lot. The remaining questions were offered “yes” and “no” responses. Table 17 shows the results for each question for Years 1, 2 and 3. Graph 18 summarizes the coolness perception.

Table 17. Students’ Post-Survey: Summary of *Kidz Bite Back* Impact (Years 1, 2 and 3)

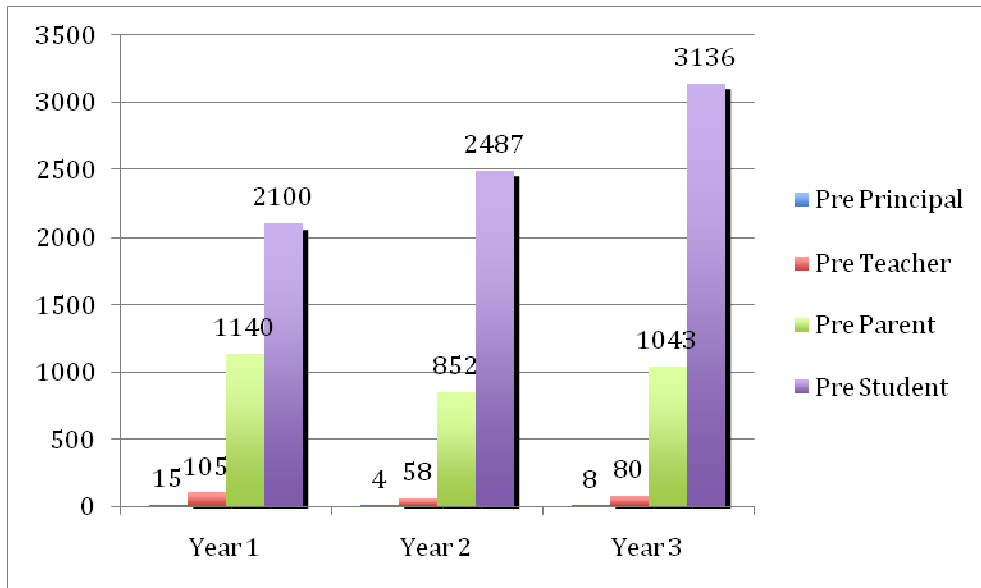
Question	Year 1	Year 2	Year 3
Please rate the <i>Kidz Bite Back</i> on how cool it is. (1 = not cool; 5 = very cool)	M = 3.9	M =3.8	M =4.0
I am smarter than fast food companies.			
Yes	81%	81%	*
No	19%	19%	*
I am smarter than TV networks.			
Yes	76%	78%	*
No	24%	22%	*
I received the <i>Kidz Bite Back</i> gear for the assembly.			
Yes	59%	75%	81%
No	42%	25%	19%
I received the <i>Kidz Bite Back</i> gear to spread the word.			
Yes	36%	52%	52%
No	64%	48.%	48%

*Questions did not appear on survey instrument

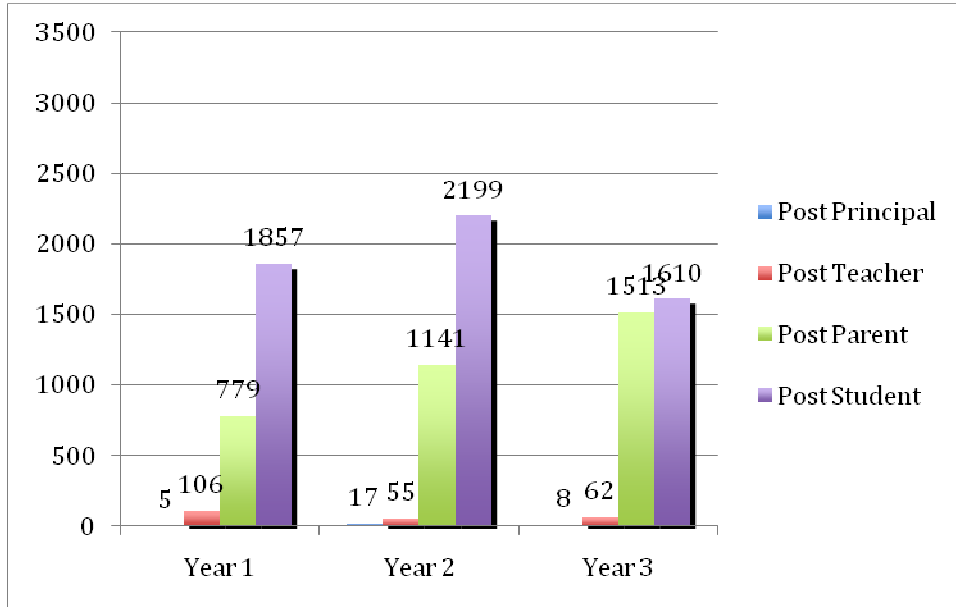
Graph 19: Student’s rating of the coolness of KBB (Years 1, 2 and 3)



Overall Participation in the pre-surveys (Years 1, 2 and 3)



Overall Participation in the post-surveys (Years 1, 2 and 3)



Discussion

The data analyses cover a wide-range of data across the four groups of respondents including the school principals, teachers, parents / guardians, and students for three years of intervention and evaluation. Although the researchers initially estimated that 3200 4th and 5th grade students would be eligible to participate, student participation decreased steadily in Year 2 and Year 3. The decline in student participation in Year 3 could be attributed to the change in venue for survey administration from the media center to the classrooms. As for the principals, just over half of the principals responded to the pre and post-survey. Additionally, teacher participation dropped throughout the three years with only 62 teachers responded at the end of the third year. It was estimated that 3200 parents / guardians were eligible to participate, substantially more participated in Year 3 than in Year 2. Ethnicity was removed from the survey based on no plausible need.

For personal physical fitness and nutritional habits, about 70% of the responding adults (principals, teachers, and parents) reported being in good to excellent physical condition with about 50-60% reporting to engage in physical exercise 2-5 times per week, while about 30% reported being overweight. Most adults reported watching television about 2 hours per day and only a very small percentage of adults playing video games. These results seemed to remain consistent over the three years.

When correlating the parental behavior with the behavior of their children, there were noted statistically significant findings. See Table 8. For example, the child's weight was positively correlated to the parent's weight in Year 1 and Year 3. In all three years, data showed the child's weight was positively correlated to the number of hours that the parent and the child watched television. Also, there were a few negative correlations noted in all three years: a) as the parent's level of fitness increased, the parent's and the child's weight decreased; b) as the parent's age increased, the number of hours that the child watched television decreased; and c) as the parent's weight increased their physical fitness decreased.

The majority (83%) of teachers reported eating breakfast and 94% ate lunch. The principals and teachers stated that vending machines were available in the school lounges and included water as well as junk food, but Year 3 had a few teachers reporting no junk food or sodas in the vending machines. The post-survey was void of responses from the teachers regarding the type of lunch they consumed.

When the adults were asked to rank the level of care about health from the companies (fast food, snack foods, soft drink, television networks, and video game manufacturers), the teachers and parents reported no statistically significant changes between the pre-survey and post-survey for Year 3. As for the overall *Kidz Bite Back* impact, the principals had a mean score of 4.9 and the teachers' mean score 3.6 on a 5-point Likert scale with 1=not much and 5=a lot.

For the parents' rating scores of companies caring about the health of kids, Year 1 showed statistically significant results from pre survey to post survey in parent's beliefs that fast food companies, snack food companies, and soft drink companies cared more for the health of kids. For Year 2, soft drink companies showed statistically significant results from pre survey to post survey in parent's belief that soft drink companies cared less for the health of kids. This finding suggests that the parents' opinion of these companies decreased with regard to only the soft drink companies in Year 2. Year 3 showed no statistically significant differences in the ranking of the companies caring for the health of kids from pre to post-survey. As for the overall

Kidz Bite Back impact in Year 3, most (79%) parents reported their children educating them about *Kidz Bite Back* and 68% reported the effect in the child's participation having positive effects on decreasing sedentary behaviors and 72% reported the child's involvement resulting in healthier family eating. This was a significantly large increase in respondents compared to the previous years.

For the student data, the results showed that there was a statistically significant increase on the post-survey mean scores related to the number of hours of television and video games that the students watch or play per day for Year 1, however, Year 2 showed statistically significant decreases in video game playing with no change in TV viewing. Year 3 showed statistically significant increases in television and video viewing. For consumption recall in the past three days, fast food, soda, and junk food consumption showed statistically significant increases from pre to post-survey in Year 3.

When the students were asked to rank the level of care about health from the companies (fast food, soft drink, television networks, and video game manufacturers), there were two statistically significant findings between the pre-survey and post-survey in Year 3: students' perception of fast food, soda and television companies showed a decrease from pre-survey to post-survey in Year 3, indicating that students felt these companies cared less for the health of kids, representing an intended effect of the program. The students' perception of video companies increased from pre-survey to post-survey, however this could be attributed to the physical activity promoted by companies such as *Wii*.

As for the overall *Kidz Bite Back* impact, the majority of the students reported that *Kidz Bite Back* was "kinda cool" (22%) or "very cool" (50%). With regards to gear (backpacks, t-shirts), 42% of the students stated that they did not receive the *Kidz Bite Back* gear for the assembly in Year 1 compared to only 25% in Year 2 and 64% stated that they did not receive the *Kidz Bite Back* gear to spread the word in Year 1 compared to 48% in Year 2. In Year 3, 81% of the students reported receiving gear for the assembly, a large increase from the previous year and similar to Year 2, 52% reported receiving gear to spread the word.

Limitations

There are several limitations to be addressed in this study. Some limitations are universal in this type of survey research; however, when possible limitations should be addressed in the formative research phases as identified.

1. Since the survey responses were self-report, there was no way to verify the accuracy of the data.
2. The sample participants may have received information about nutrition and exercise after the pre-survey and before responding to the post-survey that may have influenced their responses beyond the *Kidz Bite Back* program.
3. The survey questions related to consumption of soft drinks failed to define the ounces in one soft drink.
4. The adult respondent (principals, teachers, and parents) surveys had unacceptable amounts of missing data in the pre-surveys and the post-surveys that may be attributed to schedule conflicts.
5. Student survey results may have shown significant changes, however, this is not uncommon with large datasets and effect sizes need to be taken into account.

6. Students may have not responded to survey questions based on a reflection of having completed the same survey in the beginning of the school year.
7. Recall data consisted of previous day and three day recall that may have included weekends or other unknown effects.
8. With any survey, there is the chance of respondents giving answers they feel are socially desirable.
9. There were survey administration changes in Year 3, students were able to take the survey individually and at various times in the classroom.

Conclusion

The data show the strengths and challenges faced by *Kidz Bite Back* in Year 3. The strengths include the positive effects on child knowledge and education passed on to the caregiver and families reflecting positive behavior changes in the home. Overall *Kidz Bite Back* continued throughout the three years to be viewed as being cool. An additional strength included the students' perception of fast food, soft drink companies and TV networks decreased on the post-survey, representing they feel these companies do not care for their health. Again, the program was not to encourage kids to have a negative attitude about the companies, but rather to consider consumption in moderation.

It is recommended in future *Kidz Bite Back* programs that the survey administration to the children in the post-survey start with the questions that did not appear on the pre-survey to increase likelihood of student completion. Also, it is recommended that survey administration be consistent in all schools and classrooms to avoid external factors that may influence the survey results. To avoid low sample sizes in principals and teachers, it is recommended that pre-survey incentives be given to the principals and teachers.

Recommendations for survey items for future implementation evaluation include having skip patterns to avoid confusion with the children and unnecessary answers. To improve the evaluation, having the questions worded identically on pre and post survey would be helpful.

On the challenging side for future programs, it is necessary to increase the respondent rate among the adults, thereby decreasing the unacceptable rate of missing data. The principal data and the teacher data suggest that there is limited "buy in" at this level. With any intervention, it is important to try and make it sustainable within the context of the population. The more involved the schools can be the more likely they will be able to carry the intervention forward in the light of little or no funding.

Even though the results may not have revealed statistical significance differences compared to previous years on some variables they may be deemed favorable to the intervention, these data show a change, which may reflect a change in recent activities and food consumption. If no significant changes were noted, the data would not have shown statistical differences in either a positive or negative direction. Lastly, either revamping or further investigating of components of the program that received low ratings every year should be considered through qualitative research. For example, it would be helpful to talk to the teachers and principals to find out why these components were not as liked as other components and gain audience-centered suggestions for improvement.

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