College Teaching and Community Outreaching: Service Learning in an Obesity Prevention Program

Melissa Himelein, Liz Passman, and Jessica M. Phillips

ABSTRACT

Background: *Service learning can enrich students' knowledge, skills and commitment to occupational goals while positively affecting communities. Undergraduate students in a course on obesity engaged in service learning by assisting with a family-based obesity prevention program, Getting Into Fitness Together (GIFT).* ***Purpose:*** *The impact of GIFT on students and family participants was evaluated.* ***Methods:*** *Students (N=33) completed surveys assessing their perceptions of the course and its service learning component. Eighteen of 21 families who participated in GIFT completed questionnaires and interviews about their experience nearly six months after the program ended.* ***Results:*** *Students evaluated both the course and service learning very favorably; a consistent theme was that the opportunity to apply classroom learning to a real-world experience was invaluable. GIFT participants described strong satisfaction with the program (retention rate = 90%), and most (89%) reported tangible behavioral changes in physical activity or eating patterns.* ***Discussion:*** *Service learning in obesity prevention offered benefits for college students and participants. Especially notable aspects of the program include its emphases on full-family involvement, physical activity and family mentoring.* ***Translation to Health Education Practice:*** *Service learning may offer an especially influential means of introducing future health educators to the critically important topic of obesity.*

Himelein M, Passman L, Phillips JM. College teaching and community outreaching: Service learning in an obesity prevention program. Am J Health Educ. *2010;41(6):368-378. This paper was submitted to the* Journal *on June 4, 2009, revised and accepted for publication on August 18, 2009.*

BACKGROUND

Service learning, a method of experiential education that blends purposeful community service with related academic learning, benefits both students and communities. On college campuses, service learning has been found to positively affect students' personal and interpersonal development, improve academic learning and application skills and increase future commitment to service.[1] For communities, students have proven to be a valuable resource, engaging in projects that otherwise may not take place; in monetary terms, the value of U.S. college student service in 2007 has been estimated to be nearly seven billion dollars.[2]

Service learning can play an especially important role in the education of health professionals, who are in need of training experiences in community-based settings to develop the broad range of skills required by modern health careers.[3] Hodges and Videto[4] described the importance of service learning in a master's level health education curriculum, where embedding it in multiple courses helped students gain the competencies necessary to be effective practitioners, while deepening their professional commitment. In clinical careers, the opportunity to work with future clients or patients can enhance interpersonal skills and improve cultural competency. For example, nursing students who participated in a service project helping low-income pregnant teenagers

Melissa Himelein is a professor in the Department of Psychology, CPO #1630, University of North Carolina Asheville, Asheville, NC 28804; E-mail: himelein@unca.edu. Liz Passmanis a preschool teacher in Charleston, SC 29412. Jessica M. Phillips is a nursing student in Greensboro, NC 27410.

transition to parenthood emerged with greater understanding of the barriers facing people from underserved communities and increased comfort and ability working with diverse individuals.[5]

Undergraduates majoring in health-related fields also gain from service learning opportunities. Students in health and elementary education degree programs who presented health lessons to children in inner-city elementary schools described the experience as "one of the most difficult and meaningful"[6(p.238)] of their college careers. Though apprehensive beforehand, students appreciated the chance to apply what they had learned and to develop such skills as classroom management, collaboration and using state education standards. Similarly, undergraduates from a variety of fields who participated in a service learning nutrition education program made stronger connections between their course work and applied experience.[7] Cashman and Seifer[8] argue that service learning is an ideal approach to teaching public health to undergraduates, asserting that students who volunteer in public health settings will develop not only an understanding of social determinants of health but also the skills and desire to improve community health in the future.

In the present research, students took part in an undergraduate service learning project focused on preventing what is arguably the most critical health crisis today: childhood obesity. Obesity prevalence among U.S. youth has risen dramatically; in just the past 30 years, rates of obesity among preschoolers and adolescents have doubled, while rates among children have tripled.[9] Among the many negative consequences of this epidemic, most ominous is the likelihood that it will cause an end to the steady rise in life expectancy that Americans have long enjoyed.[10]

To date, neither obesity prevention nor intervention programs have met with great success. Most meta-analyses of randomized controlled trials suggest that treatment effects are small and poorly maintained.[11] However, using a different methodological approach to synthesize prior findings, Flynn et al. concluded that current programs often produce short-term improvement.[12] Even small successes are better than doing nothing; the authors of another meta-analysis noted that lifestyle intervention programs were significantly more effective in producing weight loss than education-only or no-treatment comparison groups, where the average participant was likely to continue to *gain* weight.[13] Consequently, they concluded that current treatments result in clinically meaningful change in the short-term, which may prove to be sustained as researchers incorporate sufficient follow-ups in their outcome studies.

Clearly, efforts to help overweight or obese children change behaviors are potentially worthwhile, and 21st Century health educators need to be well-versed in promising obesity prevention and intervention strategies. For example, family-based interventions tend to produce better outcomes than programs targeting children only,[14,15] suggesting that modern treatments should strive to incorporate children and their parents. Another important dimension of intervention design is whether to emphasize dietary restriction, increasing physical activity, or both. Here, the available research offers less clear guidance,[16] although exercise has clearly emerged as an essential component in obesity prevention.[12] Among school-based programs, interventions that emphasize physical activity have proven especially effective.[17] Because exercise can enhance both physical and mental health, researchers have urged physicians to work with parents to encourage physical activity in their children.[18,19]

The prevention program studied here was conducted by college students enrolled in an undergraduate course on obesity. Following traditional academic preparation, students engaged in an intensive service learning experience: planning and facilitating a 14-session obesity prevention program, Getting Into Fitness Together (GIFT). Based on reviews of the obesity prevention literature, GIFT was family-based, fully incorporating both children and their parents, and focused primarily on increasing physical activity.

PURPOSE

The pilot research had two primary goals. First, we explored the impact of participating in an obesity prevention service learning experience, the GIFT program, on college students. Second, we examined program effectiveness, measured by participants' satisfaction with GIFT and by whether the program successfully stimulated tangible lifestyle change that was sustained over time. Between five and six months after GIFT ended, participants completed interviews and surveys assessing program logistics, program satisfaction, and perceived impact.

METHODS

Participants

College students. Advanced undergraduate students at a small, public, liberal arts university were offered the opportunity to enroll in a special topics course entitled "Practicum in Family Wellness," described in the announcement as a course focused on obesity that would involve participation in a family-based prevention program. The class was cross-listed in two academic departments (Psychology, and Health and Wellness Promotion) and could be counted toward required elective credits in either major. Across two years (with one section of the class each year), a total of 33 students, primarily juniors and seniors, enrolled in the class. Most were female (97%) and White (94%).

GIFT program participants. Several strategies were used to recruit family participants for the GIFT program. The university's public information office wrote press releases that were printed in local newspapers and magazines, and university faculty and staff were invited to participate via an on-campus e-mail announcement. Flyers describing the program were sent home with all children attending three public city schools, and elementary school physical education teachers throughout the region were given information packets and asked to refer appropriate families. Two home school networks also agreed to promote the program through electronic mailing lists. In addition, 16 partnering com-

munity health agencies, medical clinics and nonprofit organizations shared information with their clientele, posters were displayed in local health clubs and weight loss clinics, and brief program descriptions were printed in several on-line community calendars.

Overall, 21 families took part in GIFT: 11 in Year 1, and 10 in Year 2. The primary means by which families had learned about the program were through a local newspaper or magazine article (33%), a school flyer (24%), a home school e-mail announcement (14%), a personal referral from a friend (10%), and a campus e-mail (10%).

For children to participate in GIFT, at least one parent or guardian was required to enroll. In most families (76%), mothers assumed primary responsibility for participation; in the remaining families (24%), attendance rotated between parents or two parents attended jointly. The mean age of the 29 children who participated in GIFT was 9.03 years (range 6-12); three additional children who were too young to enroll attended GIFT child care (mean age=4.00). Overall, 72% of children were white, 14% were African American, 7% were Latino, and 7% were Asian American. Most parents were married or living with a partner (76%), with 24% of parents either separated or divorced.

Although the GIFT registration form requested information about each family member's weight difficulties and current activity levels, family members were not asked to specify exact weights nor were they weighed by program personnel prior to their participation. Of 21 families, 11 reported that all family members were overweight, nine reported that one or more were not overweight, and one reported that none were overweight, but all were "unfit."

GIFT Program Intervention

The seven-week program took place on the university campus, making use of existing fitness facilities and outdoor green spaces. Sessions were conducted twice per week, in the late afternoon, for 60 minutes. The only cost for the program was a $35 registration fee. Because the fee was refunded upon completion of the program, its sole purpose was to motivate families to continue attending GIFT throughout its duration.

Each family was paired with a college student class member who served as their mentor. Mentor responsibilities included making a home visit at the outset of the program, calling families at least once per week to insure satisfaction and commitment, and serving as a support throughout the program. Because there were more college student class members than participant families, larger families and families with special needs were assigned two mentors.

Session activities were designed to be fun and appealing, while aerobically challenging. In constructing lesson plans, students were encouraged to adapt or create games that required minimal technical skill, with competitive elements de-emphasized in the effort to maximize enjoyment for all participants. Some sessions (four in Year 1, seven in Year 2), involved "full-family" activities in which all family members participated jointly, along with their college student mentor. For example, the first day's activity was a full-family scavenger hunt: Families walked together with their mentors to a nearby botanical garden, and then worked in teams to collect a list of outdoor items (e.g., pinecones, a red pebble, a piece of trash) as quickly as possible. Including the walk back to the campus gym, families moved continuously for nearly the entire hour. Additional full-family activities are listed in Table 1.

The remaining sessions involved separation of family members into three different groups: children (ages 6-9), youth (ages 10-12), and adults. College student class members took turns leading or co-leading age-appropriate activities in each group. Younger children played adapted versions of traditional games (e.g., varieties of tag, balloon and hula-hoop games, relay races), while youth activities were somewhat more complex and required greater coordination (e.g., Capture the Flag, adapted ultimate Frisbee). The goal of adult sessions was exposure to a broad spectrum of activities, in the hopes that one or more might prove to have long-term appeal. Initial sessions involved walking and hiking; varied activities (e.g., dance aerobics, yoga, pilates, water aerobics) were introduced during later sessions.

Low-calorie, healthful snacks were provided to child and youth participants following each session. Families also received weekly newsletters, written in part by student class members, which featured healthy recipes, information about physical activity, tips for lifestyle change and an active family "homework" assignment (e.g., walking together and flying a kite, taking a hike, jumping rope). To encourage compliance with homework, families were given a related weekly "incentive" (e.g., pedometers, water bottles, jump ropes). Funding for snacks, incentives, child care and recreational equipment was provided by a small intramural fellowship (approximately $4000 across both

Table 1. Sample Full-Family GIFT Activities

Full-Family
▪ Aerobic scavenger hunt
▪ Aerobic egg hunt: families hunt for eggs, but can only carry one at a time
▪ African dance, with guest drummers
▪ Indoor/outdoor games and relays
▪ Adapted sports activities, e.g., soccer with a beach ball, ultimate Frisbee with a puffer ball
▪ "Olympic" games, e.g., hula-hoop shotput, crab soccer, wheel barrel track, body bowling, potato sack jumping
▪ Parachute games

years of the program), which also afforded the first author a slight reduction in teaching load for planning and implementation of the project.

Measures

Both survey and interview tools were incorporated in the assessment of college students assisting in the program and participating families. A complete list of instruments used in the study across both years of the program is presented in Table 2.

Student evaluations. College students evaluated the Practicum class in two ways. First, students' perceptions of their classroom experience were assessed by a standardized 11-item course instruction survey, routinely administered in classes at the university. Relevant to the present examination, students rated course organization, interest, and overall quality on a 5-point Likert scale (1=strongly disagree, 5=strongly agree). Second, to examine students' attitudes about their service learning experience (i.e., facilitation of the GIFT program), Year 1 students also responded in writing to four supplemental open-ended questions. Adapted from the Higher Education Service-Learning Survey,[20] a measure of the effect of service learning on student development, these items addressed perceived benefits and disadvantages of service learning, its impact on comprehension of course material, and its impact on learning about "yourself or others."

College students also evaluated the GIFT program. On the final day of class during each year of the program, they participated in a 75-minute focus group session facilitated by the course instructor, the first author. Four questions, patterned after the "SWOT" (strengths, weaknesses, opportunities and threats) assessment tool often used in strategic planning,[24] were posed to the group: what are the GIFT program's greatest strengths?; what are its greatest weaknesses?; what future opportunities for GIFT are possible?; and what threats to GIFT are possible? SWOT analysis was selected because it encourages an impartial, objective mindset thought important in a class of students who, by the end of the semester, had been deeply (and possibly personally) involved in the GIFT program. The two independent focus group sessions (one per year) were audiotape-recorded; in combination with notes taken by the facilitator during sessions, the recordings were later used to prepare abridged transcriptions.

GIFT participant evaluations. Each family's attendance at the 14 GIFT sessions was recorded so that retention rates for each year of the program could be calculated. To assess satisfaction with the GIFT program, as well as its impact, family participants in both years of the program completed structured follow-up interviews after the program ended. Interview items relevant to this examination were identical between the two years. Three questions addressed program structure: preference for full-family versus separate group activities (asked of both parents and children), evaluation of specific adult group activities (asked of parents only), and quality of the mentoring experience (parents only). Overall program satisfaction was evaluated by asking both parents and children whether they would be interested in doing the program again, and why or why not. Finally, three questions directed only at parents focused on perceptions of long-term impact: whether personal goals were achieved, lifestyle modifications that had occurred and specific changes in exercise patterns.

In addition, Year 2 family participants also completed a brief, 8-item survey assessing typical behavioral health practices. Relevant to this examination were four questions evaluating nutritional habits, drawn from the 2006 North Carolina Child Health Assessment and Monitoring Program survey,[21] which is associated with the annual Behavioral Risk Factor Surveillance

Table 2. Evaluation Instruments Used in Research

Instrument	Target Population	Years Used
Course Instructional Survey (3 items, rated on 5-point Likert scale)	College students	Year 1, Year 2
Higher Education Service-Learning Survey (4 questions, open-ended)	College students	Year 1
Focus Group SWOT Analysis (4 questions, open-ended)	College students	Year 1, Year 2
Attendance Records	GIFT participants	Year 1, Year 2
Structured Interviews	GIFT participants:	
▪ Full-family vs. separate group preference	Adults, children	Year 1, Year 2
▪ Evaluation of adult group activities (rated on 5-point Likert scale)	Adults	Year 1, Year 2
▪ Quality of mentoring experience (open-ended)	Adults	Year 1, Year 2
▪ Would you do program again?	Adults, children	Year 1, Year 2
▪ Long-term impact (3 questions, open-ended)	Adults	Year 1, Year 2
NC Child Health Assessment and Monitoring Survey (4 items addressing nutritional habits)	GIFT participants: Adults, children	Year 2

System (BRFSS) Questionnaire.[22] Specifically, parents and children were questioned about daily servings of fruits, daily servings of vegetables, daily consumption of French fries or chips, and weekly frequency of meals at fast food restaurants. BRFSS survey items have generally been found to have moderate to high levels of validity and reliability.[23]

Procedures

The Practicum course consisted of primarily didactic instruction for the first half of the semester and facilitation of GIFT during the second half of the semester. Weekly reading assignments (journal articles, book chapters, special reports and popular writings) were required only during the initial seven weeks of class, and were available to students through electronic reserve. Topics of the reading and corresponding lectures and discussion included: (1) the causes, consequences, and treatment of obesity; (2) analysis of promising intervention programs, with an eye toward design of GIFT; and (3) research on motivation and behavior change, exercise maintenance, family dynamics and teaching methods, in order to introduce students to effective means of encouraging family lifestyle change. To ensure basic mastery of this material, students completed weekly reading quizzes as well as a brief class presentation evaluating a promising intervention program. Other assignments during this portion of the class were designed to engage students in tangible preparation for conducting the GIFT program. For example, students volunteered for one of four class "committees" charged with a specific program task: assistance with participant recruitment, researching healthy snacks to be served after sessions, shopping for weekly activity incentives for participants and planning the GIFT "finale" event. In addition, all students designed and submitted one GIFT lesson plan that they would be responsible for leading, wrote one article for the weekly GIFT newsletter on healthy eating or physical activity and completed an at-home interview of the family that they were assigned to mentor.

Although students' workload was somewhat heavy during the first half of class, this was balanced by relatively lighter responsibilities outside of class once GIFT began. Beyond mentoring contacts, remaining committee work and preparation for the GIFT session they would be leading, their only other major assignment during this time was to keep a weekly journal about their experiences in the GIFT program. As a group, students did not participate in the design of the measures or procedures for assessing GIFT. Completed journals and logs of mentoring contacts were turned in on the last day of class, the same session in which students evaluated the course (through instructional surveys and supplemental qualitative questions) and the GIFT program (through focus group assessment).

Approval to conduct research on the impact of the Practicum course and the effectiveness of the GIFT program was granted by the university's Institutional Review Board. Prior to completing their survey instruments and taking part in the focus group assessment, college students were informed of their rights as research participants orally and in writing. Surveys were anonymous and students were expressly reminded "*not* to write" their names on the open-ended evaluation. Informed consent for GIFT participants was obtained at two time periods. During initial home visits prior to the start of GIFT, mentors described the GIFT program to all family members, and adult participants gave written consent for themselves and permission for their children to take part. Children, all under age 12 at the start of the program, gave verbal assent. (Consent was not solicited from child care participants, who were all under age 6, because they were technically neither part of the program nor part of the research.) At the final GIFT session, all family members were told that a follow-up interview assessing the program and its impact would be requested at a later date. Adult participants were then contacted by telephone or e-mail 4-5 months after the program ended and formally invited to take part in the research. Prior to beginning the interviews with families who agreed to participate, the researchers described the study and family members' rights as research participants, and then obtained written informed consent for both child and adult research participation from adult family members. The interviewer also described the research to participating children, obtaining their assent orally.

During Year 1, all 11 participating families were successfully contacted and all agreed to participate. Only 7 of 10, Year 2 families were successfully contacted: one family had moved and could not be reached by telephone or letter, and two families did not respond to repeated efforts at contact. However, all Year 2 families who were contacted agreed to participate in the research. All interviews were completed within six months of GIFT's final session.

The second author, formerly a student in the Year 1 Practicum class, conducted all Year 1 interviews. Ten took place in person, at participants' homes, on campus, or in restaurants, and one interview was completed electronically. The third author, a student in the Year 2 Practicum, conducted all Year 2 interviews, which were completed at participants' homes or on campus. As part of their training completed prior to data collection, interviewers conducted practice interviews with volunteers to ensure their comfort and consistency with the interview protocol. Points of confusion and permissible areas for follow-up probes were clarified in weekly meetings with the first author, who also provided instruction in interviewing skills and methods. The interviewers recorded participants' responses in writing during the interviews, a strategy made possible because the majority of interview questions were closed, and requiring only brief answers.

During Year 2 only, GIFT participants (parents and children) were asked to complete a short "pre-test" survey during their mentor home visits, which took place at the beginning of the program. This survey was then repeated during the follow-up interviews.

RESULTS

Practicum Course Evaluation

College student ratings of the classroom experience were analyzed separately for the two years of the program. For Year 1

students (*n*=15), the mean rating for course organization was 4.1 (1=very disorganized, 5=very organized; *SD*=.35), the mean rating for course interest was 4.7 (1=very boring, 5=very interesting; *SD*=.92), and the mean rating for the course overall was 4.8 (1=very poor, 5=excellent; *SD*=.46). Among Year 2 students (*n*=15), mean ratings increased to 5.0 (*SD* = 0) on each of the same three items.

Student answers to the four open-ended questions about service learning were examined with the goal of identifying themes common to a majority of responses. The first question focused on benefits of service learning: "What do you think you gained from this course by the presence of a strong service-learning component?" Most students (73%) emphasized the importance of having a real-world opportunity in which to apply what they had learned and to see "knowledge and ideas at work" (Participant #3). As described by Participant #2, "It was…beneficial to see these 'overweight children' we read about as real people rather than statistics." Other, less common themes that emerged were greater class enjoyment (described by 33%) and the chance to develop specific skills such as problem-solving, improvising and establishing boundaries (33%). (Note that percentages do not add up to 100 because most participants' responses incorporated multiple themes.)

Regarding disadvantages of service learning, the most frequent response, given by 40% of students, was "none." Among students who were able to articulate a weakness, responses were highly varied with no one theme emerging. Two students noted that once the GIFT program began, there was not enough time left for the class to communicate as a group. Other disadvantages, cited by no more than one individual, tended to focus on specific, personal challenges, e.g., a lack of confidence in leadership abilities, frustration that course grades were based not only on academic performance, and feeling an uncomfortable level of responsibility to show up for every class.

In response to the third question, whether service learning had aided "understanding of course material," nearly all of the students (93%) believed that their experience with GIFT had improved comprehension of course content. Expanding on responses to the first question, most students (71%) again emphasized the importance of application in learning. For some, real-world experiences were viewed as key to retaining information, superior in this regard to classroom-based learning. For others, the benefit was more loosely articulated: "It helped me take what I had learned to the next level" (Participant #6). Some students (40%) mentioned discovering new concepts through service learning that were "not evident in the [course] material" (Participant #1). In addition, a few students (27%) described experiences of empathy inherent in the GIFT experience, for example, gaining a better understanding of "the challenges that the parents and kids face" (Participant #4) or simply of the "daily life [of someone] who struggles with weight loss" (Participant #12).

The final question assessed what students had learned about themselves or others as a result of their service learning. Responses fell into four categories of intra- or interpersonal learning, each represented approximately equally. One-third of students (33%) described personal lessons about health, ranging from learning new options for exercise for themselves to understanding that being healthy takes a great deal of effort. A second group of responses (27%) focused on interpersonal learning, such as gaining confidence in leading group activities. Third, some students (27%) addressed psychological changes that occurred as a result of the GIFT program, for example, learning to let go of inhibitions in working with children, or changing prior "judgments about weight standards" (Participant #13). Finally, career direction became clarified for a few students (27%), as in becoming more certain that a career working with children, or even *not* with children, would be ideal.

GIFT Program Evaluation

Program attendance and retention. During Year 1, the mean attendance rate was 11 (of 14) sessions (range = 4 to 14). Only one of the 11 participating families dropped out of GIFT, defined as attendance at less than half of sessions. In this family, the mother became seriously ill during the course of the program and could no longer participate; however, the family did participate in the follow-up interview. During Year 2, mean attendance was again 11 sessions (range = 6 to 14). As in the previous year, one family left the program prematurely; they did not give a reason for their departure, and they did not participate in the follow-up. The overall retention rate, across both years of GIFT, was 90%.

Evaluation of program structure. Year 1 and Year 2 GIFT participants' responses to interview questions were analyzed separately because some changes in program structure occurred in Year 2, as a result of Year 1 feedback. Parents and children evaluated their preferences for separate-group activities (i.e., children, youth and adults each involved in different group activities) vs. full-family activities (all families and mentors simultaneously participating in the same activities). During Year 1, when only 4 of 14 sessions were designated full-family, a majority of parents (adults in 7 of 11 families) indicated that they would have preferred more full-family activities. Among the child and youth participants in Year 1 (*n*=14), there was less consensus: Six expressed a preference for full-family activities, five preferred playing with "kids only," and three were unsure. During Year 2, the number of full-family sessions was increased to seven (50% of sessions). Among Year 2 adults (*n*=7 parent groups), four thought this balance was "just right," while two would have liked more full-family sessions, and one would have liked more separate-group sessions. Year 2 children and youth (*n*=8) were split, with four preferring separate sessions, three preferring full-family, and one liking both equally.

Adults were asked to rate their satisfaction with specific separate-group activities using a 5-point Likert scale (1=least liked, 5=most liked). As indicated in Table 3, walking and hiking were the most popular activities across both years. Other highly enjoyable activities included water aerobics (second in

Table 3. Adult Participants' Preference for Specific Activities (1=least liked, 5=most liked)

Activity	Year 1 (Means, SD)	Year 2 (Means, SD)
Walking/Hiking	4.45 (0.52)	4.29 (1.25)
Water Aerobics	4.33 (0.71)	n/a
Core Strengthening	n/a	4.33 (0.82)
Yoga	4.05 (1.01)	4.00 (1.67)
Weight Training	3.44 (0.88)	n/a
African Dance	3.40 (1.51)	3.86 (0.90)
Aerobics	n/a	3.71 (1.50)
Pilates	n/a	3.57 (1.40)
Tantric Toning Video	3.06 (0.88)	n/a
Dance Video	2.70 (0.82)	n/a

popularity among Year 1 respondents), core strengthening (second in the Year 2 group), and yoga (third-ranked in both years). The two least satisfying sessions differed from all others in that they consisted of video-led exercise; although facilitators were present and participated in the activity, expertise was provided by video instructors.

Another aspect of program structure evaluated by participants was their experience with their family mentors. During each year of the program, adult participants expressed strongly positive feelings about mentors. In response to a follow-up question about aspects of mentoring that could be improved, only two Year 1 respondents could think of possible modifications: more mentor-family contact and more structure. Among Year 2 respondents, no participant perceived a need for any changes in mentoring. For some families, the benefit of mentors was greater self-assurance: "Mentors made us feel more comfortable and secure coming and less part of the pack" (Participant #6, Year 1). Others described feeling more "accountable" (Participant #4, Year 2) because of their mentors, and ultimately more committed to the program.

Program satisfaction. Across both years of the program, nearly all families were interested in participating in GIFT again, one measure of overall program satisfaction. Parents were universal in their support of the program; however, three (of 14) Year 1 children expressed some doubts ("maybe" or "no"), as did one (of 8) Year 2 children ("it depends").

Parents' reasons for satisfaction were highly varied. Explanations described by at least two families included increased family time, fun, the opportunity for exercise, their children's enjoyment and the ability to learn new information about healthy lifestyles.

GIFT program impact. Questions about impact were directed at parents only. First, parents described their original goals when enrolling in the GIFT program and then assessed whether they had been achieved. For most participants, their primary objective was related to physical activity, for example, increasing its frequency for some or all members of the family, learning new activities for family members to do together, or changing previously negative attitudes toward exercise. Only three families (all in Year 2) indicated that weight loss was their main concern. Among Year 1 families, all participants felt their goals were achieved. In Year 2, four families felt that their goals were met, while three families described their goals as "partially" or "somewhat" achieved. The latter three consisted of the same three families who had wanted the main outcome of the program to be weight loss.

Second, parents were questioned about family lifestyle modifications made as a result of participating in GIFT that were retained through the follow-up interview. Nine (of 11) Year 1 families reported concrete behavioral changes in at least one member of the family. While all families described increased physical activity in one or more individuals, three families had also taken steps to change eating patterns. All Year 2 families reported maintenance of behavioral changes by at least one family member. Again, each family reported an increase in physical activity in one or more member, and all but two also described changes in eating patterns: smaller portions, more conscious eating, packing school lunches, healthier snacks, or increased vegetable intake.

Finally, parents described the specific changes in physical activity that had occurred in their families. Across both years, there was wide variety in the types of activities that family members pursued on a regular basis after GIFT ended. Walking was frequently mentioned, listed as a regular activity in seven of 18 total families. Swimming was also somewhat popular, cited by five families. Families also differed greatly in the paths they had taken to stay active. While five families specifically noted that they were more active as a family, playing or participating in activities together, most families reported that individual family members increased activity independently. Most often, one or more family members had reached out to structured programs. Adults tended to join gyms or fitness programs, take classes, or participate in workplace wellness opportunities. Children in three different families took the step of joining an athletic team for the first time (jump rope, soccer and football); other children participated in after-school programs that emphasized physical activity.

Table 4 presents mean responses of Year 2 participants to the survey items assessing nutrition practices, evaluated prior to the start of the GIFT program and again at the follow-up interview. In each family, one

Table 4. Nutrition Practices of Year 2 GIFT Participants

Variable	Children (N=7) Means and SD		Adults (N=7) Means and SD	
	Pre-program	Follow-up	Pre-program	Follow-up
Daily fruit servings	2.57 (1.24)	2.43 (1.06)	2.29 (1.11)	2.29 (0.81)
Daily vegetable servings	1.79 (0.57)	2.93 (1.54)	2.18 (0.72)	2.43 (0.93)
Daily fried food servings	0.31 (0.35)	0.06 (0.11)	0.21 (0.39)	0.04 (0.11)
Weekly meals at fast food restaurants	0.93 (1.02)	0.50 (0.87)	0.93 (1.02)	0.43 (0.79)

parent completed the survey for the whole family, estimating individual behaviors of family members not present at the meetings. Responses were compiled only for: (1) the parent who most frequently participated in the GIFT program, (2) children who were of school age (i.e., not children in the active child care), and (3) families who participated in the follow-up.

Statistical analyses comparing pretest and posttest responses were not conducted due to the very small sample size (seven adults and seven children). However, simple examination of the means indicates that the most substantial pre-post program changes occurred in children's daily vegetable intake, which increased by over one serving per day, and in both parents' and children's frequency of meals in fast food restaurants, decreasing by nearly half. Daily servings of fried food were already low in both children and adults (fewer than one serving per day), but decreased dramatically, to fewer than one per week.

SWOT analysis. College students' overall perceptions of the program provided the final measure of program evaluation. The abbreviated transcripts of student responses to the four questions were combined across years; themes that were strongly voiced among students in both years are presented.

Strengths of the program fell into two categories: benefits to participants and benefits to college students. Students perceived the program to be successful for participants because of its retention of families. They felt that it served its purpose in helping to influence children early in life, when changes are perhaps easier to make, and in teaching parents fun ways to be active with their children. For themselves, students commented on opportunities they wouldn't otherwise have had: getting to know members of the community, hands-on work experience, making a difference and learning information that would be helpful in their own lives.

Four weaknesses were identified. Students felt that longer sessions or a longer-term program might have been more helpful to participants, and they thought that the program could be improved by more emphasis on nutrition and healthy eating. They also wondered whether the program would be successful long-term, i.e., would activities transfer to a home situation? Finally, recruitment of participants was perceived as a significant challenge.

In terms of opportunities, students noted that the program presented a real-world research laboratory, and they hoped that family members could be followed long-term in order to learn if in fact the program model was effective. They also hoped the program could be expanded in the future, by offering it more frequently at the university, or by partnering with community organizations who could offer it.

Finally, the most salient threat was funding: Students were aware that the program was subsidized by a small, time-limited grant, and they were concerned about continued financial support. Other less prominent threats included concerns about on-campus space limitations in the event of bad weather and children's behavioral problems that were sometimes difficult for students to manage.

DISCUSSION

College students' perceptions of both the Practicum course and the GIFT program were strongly positive. Course ratings were highly favorable in the first year, and at the maximum level in the second, improvement that was perhaps the result of greater instructor experience. Students viewed their work in facilitating the GIFT program as extremely beneficial, appreciating in particular the opportunity to apply academic learning to an important, real-world problem. Consistent with the findings of research on service learning in health education,[4,6] students felt that their experience with GIFT strengthened their understanding of course content while encouraging interpersonal and intrapersonal development, areas not usually tapped in the traditional classroom. For example, one unanticipated but encouraging outcome was the perception of some students that they had grown not only intellectually, but also psychologically, gaining confidence, empathy, or self-awareness.

GIFT program participants likewise viewed the program as a success. Although their opinions regarding specific activities or structural aspects of the program varied, they were consistently enthusiastic in their support of the program overall. Most participants felt that the program had a significant impact on family lifestyle, resulting in

greater physical activity or healthier eating patterns in at least one family member that was still in effect up to six months after the program ended. However, it is possible that family members' strong satisfaction with GIFT may have influenced their reports of impact, in that they may have been eager to "prove" the program's effectiveness. In addition, they were interviewed by students who had themselves assisted in the GIFT program and were therefore not neutral parties. Nonetheless, quantitative outcome measures of nutrition practices collected prior to and after the Year 2 program indicated that eating tended to change in a healthy direction, supporting participants' reports of successful behavioral modification.

Regardless of GIFT participants' level of change, their commitment to the program as evidenced by their high attendance and completion rates is in itself remarkable. Though only lasting seven weeks in duration, GIFT participation required two meetings per week and weekend "homework." Attrition rates in clinic-based pediatric obesity programs, which typically involve just one weekly meeting, are often 50% or higher.[25] The fact that families perceived the program as enjoyable likely contributed to their consistent attendance. In addition, the program's affordability, coupled with the incentive of "earning back" the registration fee through completion of the program, may have been important in encouraging retention.

Family mentoring, a unique aspect of GIFT relative to other obesity prevention programs, was perhaps another significant factor motivating family commitment. Both participants and students were enthusiastic about mentoring: Participants felt greater comfort and responsibility because of mentors, and mentors gained a much more personal understanding of the challenges families face in preventing or reversing obesity. Social support has long been recognized as an important tool in motivating behavior change, and community social support interventions are a highly recommended and cost-effective strategy for increasing physical activity.[26,27] Not surprisingly, research on mentoring in college service learning indicates that students also derive considerable benefit.[28]

GIFT participants were receptive to the overall goals of the GIFT program: focusing on the family rather than individual family members, and emphasizing physical activity over dietary restriction. Adult participants seemed to understand that changing children's health behavior required their support and involvement, and many appreciated the opportunity to learn new ways to be active as a family. Parents especially valued full-family activity sessions, and the chance to combine family time with exercise was an important component of program satisfaction. It is interesting that the families who named weight loss as their main goal for GIFT were least likely to perceive the program as successful. Given the short time frame of GIFT and the tremendous challenge of achieving sustained weight loss, families who approach such a program aiming to achieve greater fitness or simply more consistency in exercise are likely to emerge more satisfied than parents who place primary emphasis on losing weight.

TRANSLATION TO HEALTH EDUCATION PRACTICE

Health educators have an important role to play in the prevention of childhood obesity,[29] and the course described here appears an effective tool for preparing prospective health professionals to battle the obesity crisis. While education about obesity is essential with or without a service learning component, the real-world, hands-on GIFT program provided students with an especially engaging learning opportunity. The capacity of this experience to affect the personal wellness habits of students was an added benefit. As future role models in a world in which two of three adults are overweight or obese,[30] it is important that health educators and clinicians are themselves cognizant of healthy activity and nutritional practices.

Student evaluations of the Practicum experience, though largely positive, provide helpful ideas for future revisions of the course and GIFT program. First, it is imperative that students feel confident in their ability to lead sessions and manage children when the GIFT program begins. To ensure this goal, a greater percentage of readings should be devoted to pragmatic issues (e.g., leadership, classroom management, teaching methods), and more in-class time prior to the start of GIFT could be spent in behavior rehearsal exercises, practicing lesson plans and role playing challenging situations. Second, because once GIFT began there was insufficient time for class communication, the program could be restructured and offered just once per week. The remaining weekly class time could then be used for debriefing the prior GIFT session and planning the next one. Though less intensive, a once weekly format might prove more attractive to busy families, an important consideration given that recruitment of families was in itself a challenge. If the one session were lengthened to 90 minutes, it might also be possible to use the extra time to incorporate more nutrition education in the program, a recommendation of some students. Third, it is important to ensure that college students are fully informed about the nature of the course when they register so that they understand expectations of them (e.g., regular attendance, course grading based not only on tests and papers, mentoring, and active program participation). Course registration could require instructor approval, thereby necessitating an individual meeting in which the class is thoroughly described; should the class become highly popular, an application for entry could be requested. In the effort to recruit male students and students of color, in short supply in both years of the Practicum, presentations about the course could be targeted to specific classes during the pre-registration advising period.

Though GIFT proved highly valuable for both students and participants, it is important to acknowledge potential challenges involved in setting up an on-campus obesity prevention program. For example, a university-based program must be conducted within the confines of not only an academic class schedule, but also the semester calendar, not always optimal timing. In addition, there may be practical hurdles to overcome,

such as competition for precious gym space or scarce parking spots. Further, several unique features of GIFT (e.g., no cost for participants, provision of child care, weekly snacks and incentives) were possible because of financial support from a small grant. Without such funding, faculty attempting to replicate such a program would need to recruit volunteers or interns to oversee child care, seek food and sporting good donations from local merchants, and/or charge a nonrefundable fee for program costs. While these strategies are certainly possible (GIFT attracted both student volunteers and local offers of donated goods largely because of one local newspaper article), realistically they are also time-consuming for faculty members already struggling with competing demands on their time.

Rather than developing a new obesity-prevention program, another approach for faculty interested in providing such an experience for students might be to join forces with an existing community program. Students would likely be welcomed as extra helpers and mentors, preserving the opportunity for the personalized one-on-one experience that was relished by both students and program participants.

To make progress on reducing obesity, health education efforts must be aimed at many levels, from individual and family to community and policy.[31] While the Practicum course incorporated study of varied strategies for obesity prevention, the GIFT program focused primarily on individual and family levels of behavior change. Service learning efforts in similar courses could attempt to effect change at broader levels, for example, focusing on the built environment by leading students in planting a community garden or constructing a greenway, or targeting public policy by advocating for removal of vending machines from local schools. Regardless of the selected strategy, service learning in obesity prevention has the potential to combat the obesity crisis in two ways: directly, by offering programs with tangible benefits, and indirectly, by providing students with the tools and confidence needed to make a difference in their future careers. Given the daunting health crises of modern society, service learning is one potential resource educators are wise to embrace.

REFERENCES

1. Eyler JS, Giles DE, Jr., Stenson CM, et al. *At A Glance: What We Know about The Effects of Service-Learning on College Students, Faculty, Institutions and Communities, 1993-2000,* 3rd ed.; 2001. Available at: http://servicelearning.org/filemanager/download/4192_AtAGlance.pdf. Accessed May 28, 2009.

2. Campus Compact. *2007 Service Statistics: Highlights and Trends of Campus Compact's Annual Membership Survey*. Providence, RI: Campus Compact; 2008. Available at: http://www.compact.org/wp-content/uploads/about/statistics/2007/service_statistics.pdf. Accessed May 28, 2009.

3. Cauley K, Canfield A, Clasen C, et al. Service learning: integrating student learning and community service. *Educ Health.* 2001;14:173-181.

4. Hodges BC, Videto DM. Service learning: creating visibility and advocacy for health education. *Am J Health Educ.* 2008;39:44-54.

5. Bentley R, Ellison K. Impact of a service-learning project on nursing students. *Nurs Educ Perspect.* 2005;26:287-290.

6. Geiger BF, Werner K. Service-learning projects to enhance preparation of professional health educators. *American Journal of Health Studies.* 2004;19:233-240.

7. Poehlitz M, Pierce M, Ferris AM. Delivering nutrition education in a service-learning course. *J Nutr Educ Behav.* 2006;38:388-389.

8. Cashman SB, Seifer AD. Service-learning: an integral part of undergraduate public health. *Am J Prev Med.* 2008;35:273-278.

9. Ogden CL, Carroll MD, Flegal KM. High body mass index for age among US children and adolescents, 2003-2006. *JAMA.* 2008;299:2401-2405.

10. Olshansky SJ, Passaro DJ, Hershow RC, et al. A potential decline in life expectancy in the United States in the 21st century. *N Engl J Med.* 2005;352:1138-1145.

11. Kamath CC, Vickers KS, Ehrlich A, et al. Clinical review: behavioral interventions to prevent childhood obesity: a systematic review and metaanalyses of randomized trials. *J Clin Endocrinol Metab.* 2008;93:4606-4615.

12. Flynn MA, McNeil DA, Maloff B, et al. Reducing obesity and related chronic disease risk in children and youth: a synthesis of evidence with 'best practice' recommendations. *Obes Rev.* 2006;7 Suppl 1:7-66.

13. Wilfley DE, Tibbs TL, Van Buren DJ, et al. Lifestyle interventions in the treatment of childhood overweight: a meta-analytic review of randomized controlled trials. *Health Psychol.* 2007;26:521-532.

14. Kitzman, KM, Beech BM. Family-based interventions for pediatric obesity: methodological and conceptual challenges from family psychology. *J Fam Psychol.* 2006;20:175-189.

15. Young KM, Northern JJ, Lister KM, et al. A meta-analysis of family-behavioral weight-loss treatments for children. *Clin Psychol Rev.* 2007;27:240-249.

16. Brown T, Summerbell C. (2009). Systematic review of school-based interventions that focus on changing dietary intake and physical activity levels to prevent childhood obesity: an update to the obesity guidance produced by the National Institute for Health and Clinical Excellence. *Obes Rev*. 2009;10:110-141.

17. Shaya FT, Flores D, Gbarayor CM, et al. School-based obesity interventions: a literature review. *J Sch Health.* 2008;78:189-196.

18. Floriani V, Kennedy C. Promotion of physical activity in primary care for obesity treatment/prevention in children. *Curr Opin Pediatr.* 2007;19:99-103.

19. Floriani V, Kennedy C. Promotion of physical activity in children. *Curr Opin Pediatr.* 2008;20:90-95.

20. Diaz-Gallegos D, Furco A, Yamada H. *The Higher Education Service-Learning Survey*; 2000. Available at: http://servicelearning.org/filemanager/download/HEdSurveyRel.pdf. Accessed May 28, 2009.

21. North Carolina State Center for Health Statistics. *2006 North Carolina Child Health Assessment and Monitoring Program Survey;* 2008. Available at: http://www.schs.state.nc.us/SCHS/champ/index.html. Accessed May 28, 2009.

22. Centers for Disease Control and Prevention. *2005 Behavioral Risk Factor Surveillance System;* 2008. Available at: http://www.cdc.gov/HealthyYouth/yrbs/index.htm. Accessed May 28, 2009.

23. Centers for Disease Control and Prevention. Methodology of the Youth Risk Behavior Surveillance System. *MMWR Morb Mortal Wkly Rep* 2004;53(No. RR-12). Available at: http://www.cdc.gov/mmwr/PDF/rr/rr5312.pdf. Accessed May 28, 2009.

24. Bryson JM. *Strategic Planning for Public and Nonprofit Organizations.* 3rd ed. Jossey-Bass, San Francisco; 2004.

25. Zeller M, Kirk S, Claytor R, et al. Predictors of attrition from a pediatric weight management program. *J Pediatr.* 2004;144:466-470.

26. Roux L, Pratt M, Tengs TO, et al. Cost effectiveness of community-based physical activity interventions. *Am J Prev Med.* 2008;35:578-588.

27. Task Force on Community Preventive Services. Recommendations to increase physical activity in communities. *Am J Prev Med.* 2002;22:67-72.

28. Schmidt ME, Marks JL, Derrico L. What a difference mentoring makes: service learning and engagement for college students. *Mentoring Tutoring.* 2004;12:205-217.

29. Pinzon-Perez H. A review of obesity and its relationship with the built environment: implications for health educators. *International Electronic Journal of Health Education.* 2007;10:78-84.

30. Ogden CL, Carroll MD, Curtin LR, et al. Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA.* 2006; 295:1549-1555.

31. Institute of Medicine. *Preventing Childhood Obesity: Health in The Balance.* Washington, D.C.: National Academies Press: Washington, D.C.; 2005.