

Bridging the Gap Program Evaluation

Final Report

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Wildlife Conservation Society
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EXECUTIVE SUMMARY

The 3-year *Bridging the Gap* program, developed and implemented by the Wildlife Conservation Society (WCS), was designed to educate minority youth from New York City (NYC) about education and career opportunities available in wildlife and conservation sciences. This National Science Foundation (NSF) Innovative Technology Experiences for Students and Teachers (ITEST)-funded program provided almost 150 minority high school students with conservation knowledge, practical information about the college application process and college life, and long-term support through continued contact with WCS staff members and zoo employee mentors. Three cohorts of students participated in the program.

Research and evaluation of the *Bridging the Gap* project occurred throughout the duration of the project and were guided by research questions covering program implementation, program quality, and outcomes of both students and their parents. Data were collected through a variety of questionnaires and program records.

Overall, the *Bridging the Gap* project was a great success. Comprehensive findings from all three cohorts include the following:

- Program elements, including the School-to-Career Institute, Career Building Institute, Parent Workshop, and internships, were implemented as planned, with some logistical adjustments to accommodate inclement weather.
- The mentoring session format was changed after Cohort 1, as it was not as successful as program staff would have liked. Cohort 2 and 3 students rated aspects of the mentoring program slightly higher than Cohort 1, which may have been a result of the change.
- The targeted recruitment number and student demographics were achieved.
- Students overwhelmingly found the School-to-Career Institute, Career Building Institute, and internships to be enjoyable and provided positive comments about quality.
- Ongoing contact between students and staff via emails and text messages were viewed favorably by students.
- Student knowledge of zoo-related topics and wildlife science careers increased over the course of the project.
- Student knowledge of science-related topics showed little change, as these were concepts likely taught as a part of their school coursework.
- Students' attitudes regarding their prospective college education and zoo careers changed little, but were high before the program began.
- There has not been enough time since program start to fully measure long-term impacts; however, data indicate that *Bridging the Gap* may have influenced students' decisions to continue their education and helped them feel more confident and prepared to do so.
- Parents of student participants, who attended the Parent Workshop, gained knowledge about the program, zoo careers, and use of online tools to streamline the college application process.
- Parents' attitudes about their children's education and science interests did not change; however, these were high before the program, so little change was expected.
- Parents rated the quality of the Parent Workshop very highly.

The following report details these findings and provides recommendations for further work to continue the success of the *Bridging the Gap* project.

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INTRODUCTION

In order to meet a need to educate minority youth from NYC about the education and career opportunities available in wildlife and conservation sciences, WCS developed a program to engage high school students on-site at local zoos and aquariums. This program, entitled *Bridging the Gap*, was designed to not only illuminate career opportunities for students, but to give them practical information about the college application process and college life, and to provide long-term support through continued contact with WCS staff members and zoo employee mentors. This program began in late 2012 and ended in May 2015.

WCS outlined six specific objectives for this program in their proposal to NSF:

1. Develop a science career program for minority high school students that provides wildlife science content, hands-on experiences in science learning and research, career-building services, mentoring, and long-term tracking and support
2. Recruit 150 minority students to participate and complete the program
3. Carry out an extensive research study that will closely analyze the project, measure its short- and longer-term outcomes, suggest needed modifications, inform the science education field of outcomes and lessons learned, and expand the research base on the use of informal science resources in STEM career preparation for minority students
4. Disseminate the project and its results to zoos, aquariums, and other informal science institutions across the U.S.
5. Assist minority students in achieving the targeted affective, cognitive, and behavioral outcomes necessary to prepare them for science careers in zoos
6. Help minority students realize longer-term outcomes that put them on a path toward pursuing science careers in zoos

The evaluation of the *Bridging the Gap* program by Hezel Associates was intended to provide periodic formative feedback to WCS, as well as support annual reporting to NSF. At project onset, program staff and Hezel Associates outlined a series of research questions to evaluate the success of meeting program objectives:

1. To what extent were activities implemented in the quantities anticipated?
 - a. To what extent did planning and recruiting activities result in enrollment of the targeted number and demographic profile of students?
 - b. To what extent did participation in the institutes, clinics, and workshops reach desired targets?
 - c. To what extent did mentoring and technical assistance activities occur as planned?
 - d. To what extent did dissemination activities occur as planned?
2. With what quality were activities implemented?
 - a. With what quality did project staff deliver institutes, clinics, and workshops?
 - b. With what quality did project staff deliver mentoring and technical (or "program") assistance activities?
3. To what extent did participant parents realize the desired outcomes?
 - a. Self-reported cognitive outcomes?
 - b. Affective outcomes?
4. To what extent did participant students realize the desired outcomes?
 - a. Cognitive outcomes?
 - b. Affective outcomes?

5. To what extent did the program achieve the desired longer-term impacts (behavioral outcomes) for participant students (e.g., academic performance)?

Hezel Associates researchers designed instruments to answer these questions and have collected and analyzed data from all three cohorts of students. The following report constitutes the final comprehensive evaluation findings for the three years of the *Bridging the Gap* program. Previously reported cohort-level data were compared and contrasted between cohorts and higher-level findings are included in order to answer the research questions. Some data were collected recently and were not previously reported; these data are included in the appendix.

METHODS

The research and evaluation of the *Bridging the Gap* program used a mixed methods approach, soliciting both qualitative and quantitative data from participants. The following describes these methods, used throughout the 3-year program.

Instrumentation and Data Collection

The following instruments and data collection methods were used to gather data from students and their parents in each cohort. Any changes in the content of the instruments or in their administration are explained. Once students were recruited, WCS staff provided each participant with two consent forms, one to be signed by the student and one to be signed by a parent or guardian. The consent forms were also available in Spanish. WCS staff then forwarded scanned copies of all signed consent forms to Hezel Associates. Only data from those with signed consent forms were used in the analysis.

Student Attitudes and Interests Questionnaire (SAIQ)

The SAIQ was designed to allow student participants to report their knowledge, attitudes, and behaviors relating to zoo and aquarium careers and education, both before and after the School-to-Career Institute. This questionnaire consisted of 55 items. For items 1 through 43, students were asked to indicate their magnitude of agreement on a scale of 1 to 5 (with 1 being “Strongly Disagree” and 5 being “Strongly Agree”). The 43 items were organized into 4 scales measuring self-reported perceptions concerning (a) education-related knowledge (15 items); (b) career-related knowledge (9 items); (c) attitudes about education (13 items); and (d) attitudes about careers (6 items). Statements 44 to 55 reflected student participation in nature-related activities, with possible answer choices of “Yes,” “No,” and “Unsure.”

This version of the SAIQ was updated from the initial administration of the questionnaire to Cohort 1. The original rating scale allowed participants to choose on a scale of 1 to 5 (with 1 being “Low” and 5 being “High”) for all 55 statements. Statements 1 through 43 were re-worded slightly for the current version to align with a 1 to 5 Agree/Disagree scale (with 1 being “Strongly Disagree” and 5 being “Strongly Agree”). Therefore, the general intent of each statement did not change; these updates were made to increase student understanding of the items, as the client and evaluator agreed that the initial version could lead to confusion, particularly among students whose first language was not English. In addition, the behavioral statements (44 through 55) were changed to allow for a Yes/No/Unsure answer format in order to reduce confusion among participants. Last, the question regarding race was updated to provide choices that better align with the defined U.S. Census Bureau categories.¹

The SAIQ was administered as a paper and pencil questionnaire to each cohort. Students were asked to include their names on the completed questionnaires for the purposes of matching pre- and post-results. Completed questionnaires were scanned and emailed to the evaluators.

Cohort 1 students completed the original SAIQ (v1) and Cohort 2 students completed the revised version (v2). Administration of the SAIQ for Cohort 3 students was problematic, as different sites received different versions. Within Cohort 3, students at four sites (Bronx Zoo, Central Park

¹ U.S. Census Bureau. (2012). *Race*. Retrieved from <http://www.census.gov/population/race/>

Zoo, New York Aquarium, and Prospect Park Zoo) received v1 of the pre-SAIQ, while students at Queens Zoo received v2. For the post-SAIQ, Bronx Zoo, New York Aquarium, and Prospect Park Zoo received v1, while Central Park Zoo and Queens Zoo received v2.

Parent Questionnaire

The Parent Questionnaire aimed to capture attitudes and knowledge of parents of student participants concerning their children's science education and careers. This instrument was designed as a pre-/post-survey, and was administered at the beginning and again at the end of each one-day Parent Workshop. The questionnaire was administered as a paper and pencil survey to parents of each cohort on-site by WCS staff. Completed questionnaires were scanned and emailed to the evaluators.

Parent Workshop Activity Quality Questionnaire

The Parent Workshop Activity Quality Questionnaire was intended to garner parent feedback on the quality of the workshop. It contained six items that asked parents to rate various quality aspects of the program on a scale of 1 to 5 (with 1 being "Low" and 5 being "High"). It also contained two open-ended questions concerning their likes and dislikes of the program. The questionnaire was administered as a paper and pencil survey to parents of all cohorts on-site by WCS staff at the end of the workshop. Completed questionnaires were scanned and emailed to the evaluators.

School-to-Career Institute Activity Quality Questionnaire

The School-to-Career Institute Activity Quality Questionnaire was created to compile students' opinions on the quality of the institute's sessions. It contained eight items that asked students to rate particular quality aspects of the program on a scale of 1 to 5 (with 1 being "Low" and 5 being "High"). It also contained three open-ended questions concerning students' likes and dislikes of the sessions, as well as how the program impacted the students. WCS staff administered the survey on-site to the three cohorts of students as a paper and pencil questionnaire at the end of each institute. Completed questionnaires were scanned and emailed to the evaluators.

Attendance Records

WCS staff recorded students' attendance for the School-to-Career Institute daily. These data were transferred to Hezel Associates researchers by email or were shared via a Google Drive spreadsheet. Each student was noted as being present, absent, or late for each of the 11 sessions. If the work from a particular session was completed at a later date by a student who was absent, this was also noted.

Career Building Institute Activity Quality Questionnaire

The Career Building Institute Activity Quality Questionnaire was created to compile students' opinions on the quality of the weekend session. It contained nine items that asked students to rate particular quality aspects of the program on a scale of 1 to 5 (with 1 being "Low" and 5 being "High"). It also contained three open-ended questions concerning students' likes and dislikes of the sessions, as well as how the program impacted them. WCS staff administered the survey on-site to each cohort as a paper and pencil questionnaire at the end of the institute. Completed questionnaires were scanned and emailed to the evaluators.

Internship Activity Quality Questionnaire

The Internship Activity Quality Questionnaire was a paper and pencil questionnaire administered to all student participants by WCS staff at the end of their internships. The instrument consisted of 10 items: 5 organized using a 5-point Likert scale, from 1 (‘‘Strongly disagree’’) to 5 (‘‘Strongly agree’’), regarding perceptions of quality; 1 multiple-choice item regarding internship length of time; and 2 open-ended items. The first open-ended item asked students to indicate particular activities they did during their internships and to note the degree of knowledge they gained from each: ‘‘I learned nothing new,’’ ‘‘I learned a little,’’ or ‘‘I learned a lot.’’ The last item asked students to give examples of how they expected to apply their knowledge gained from the internship into their lives. Completed questionnaires were scanned and emailed to the evaluators.

Ongoing Assistance Quality Questionnaire

The Ongoing Assistance Quality Questionnaire was designed to collect data on students’ perspectives related to assistance they received after attending the School-to-Career and Career Building Institutes. The questionnaire consisted of 12 statements regarding activities such as mentorships, email check-ins, and the project Facebook page, and asked students to rate their magnitude of agreement on a scale of 1 to 5 (with 1 being ‘‘Strongly Disagree’’ and 5 being ‘‘Strongly Agree’’). Three questions addressed the use of Good Shepherd Services. The last item was open-ended, and concerned the overall experience with ongoing support. This questionnaire was an online survey that was administered using Remark Web Survey software. The URL to the questionnaire was distributed to each cohort by WCS staff via email, or was provided on a tablet that was available to use by students during program sessions and/or meetings.

Long-Term Questionnaire

The Long-Term Questionnaire was designed to reveal impact on students after completing the formal *Bridging the Gap* program activities, in terms of education choices and career interests. This questionnaire was developed as an online survey, and the URL was distributed via email to Cohort 1 students by WCS staff in August 2014, and to Cohort 1 and 2 students in March 2015. The questionnaire consisted of 24 items: 2 demographic items; 18 items regarding students’ educational choices and aspirations; 1 item regarding career interests; and 3 items about the impact of the *Bridging the Gap* program on students’ educational decisions. Question branching was incorporated into the questionnaire to ensure that students were only given items that were relevant to their situation (e.g., if they had not yet graduated high school, they were not asked questions regarding their college experience).

Data Analysis

Data from paper and pencil questionnaires were entered manually by evaluators into SPSS (v.21) for analysis. Data from the online questionnaire were downloaded by evaluators into SPSS from the Remark Web Survey software.

SAIQ

A mean of all respondents was calculated for each of the 43 items. Frequencies of each response were calculated for the behavioral statements for v2 only. Some students left one or more answers blank; these individual answers were not used in the mean calculations.

To compare pre- to post-data on the total ratings for items 1 through 43, a paired samples *t*-test was performed for each of the sites that used the same pre- and post-SAIQ version. To do this, students' responses were matched using their names, as indicated on the questionnaire. Student names were removed prior to analysis. When a student left a response blank, the mean of the respondent's ratings for that particular subsection was calculated and used as a substitute. A mean across all 43 items, both pre- and post-, was calculated for each respondent. The paired samples *t*-test was then used to compare pre- and post-means. Due to the multiple statistical tests performed on these data which can produce erroneously significant findings, a more stringent standard for statistical significance was applied (Sprinthall, 2007). Effect size for statistically significant results was also calculated using an online calculator (Lipsey & Wilson, 2001).

Parent Questionnaire

Mean ratings were calculated for each item, as well as the differences between mean ratings from before and after workshop participation.

Parent Workshop Activity Quality Questionnaire

Mean ratings were calculated for each item. Responses to the open-ended questions were organized and analyzed to look for commonalities and themes.

School-to-Career Institute Activity Quality Questionnaire

Mean ratings were calculated for each of the eight items. Responses to the open-ended questions were organized and analyzed to look for commonalities and themes.

Attendance

Attendance data were tallied by category (i.e., present, absent with no make-up, absent with make-up, and late) and overall trends for the institute were noted.

Career Building Institute Activity Quality Questionnaire

Mean ratings were calculated for each of the eight items. Responses to the open-ended questions were organized and analyzed to look for commonalities and themes. The question regarding the quality of the students' internships was not analyzed because internships had not started at the time of the Career Building Institute. A separate questionnaire was developed to specifically measure students' perceptions of the internships.

Ongoing Assistance Quality Questionnaire

Mean ratings were calculated for each of the 12 items. Responses to the open-ended questions were organized and analyzed to look for commonalities and themes.

Internship Activity Quality Questionnaire

Frequencies were calculated for the internship length item, while frequencies and means were calculated on the Likert scale responses. Responses to the internship activities were organized and coded into overarching themes. Frequencies were reported for each theme. Responses to the open-ended item were organized and analyzed to look for commonalities and themes.

Long-Term Questionnaire

Researchers calculated frequencies on the 22 single- or multiple-response items. Responses to the open-ended questions were organized and analyzed to look for commonalities and themes. Cohort 1 received this questionnaire twice, and the intent was to compare those results to note any changes from one year to the next. However, the second administration for Cohort 1 gathered few responses; therefore, this comparison was not conducted.

Synthesis

Data from each instrument for each cohort were compared and contrasted to explore commonalities and/or differences. These findings are discussed in the context of the project objectives to give an overview of the project as a whole. Due to SAIQ versions differences across cohorts and within cohorts, in-depth comparisons were not possible with these data. However, general trends were identified and discussed.

PROGRAM IMPLEMENTATION

To answer the first research question regarding the extent activities were implemented in the intended quantities, Hezel Associates relied on attendance records, informal discussions with program staff, and student data collected from the SAIQ.

Bridging the Gap Program Structure

The *Bridging the Gap* program was designed to take place at five NYC sites: Bronx Zoo, Central Park Zoo, New York Aquarium, Prospect Park Zoo, and Queens Zoo. The intent was to recruit and serve three cohorts of 50 minority high school students from the five boroughs over a 3-year period. To recruit participants for each cohort, WCS solicited applications from students from several high schools through flyers and brochures, as well as communication with guidance counselors. Program information was also featured on websites of several local members of Congress. Applications were reviewed and those with high interest and a recommendation from a teacher or administrator were invited to participate in an interview with WCS staff. The interviews allowed staff to narrow the participants to 50 per cohort, with approximately 10 assigned to each site. Each student was to be given a stipend of \$1,200, disbursed in three installments over the course of their program involvement.

Because the program was designed to provide students with a wide range of information, *Bridging the Gap* consisted of several elements. The first component students were to participate in was the School-to-Career Institute. This was composed of nine consecutive Saturday sessions, as well as at least one after-school session, held at each of the five sites. The goal of the institute was to introduce students to zoo and aquarium careers and the education necessary to attain a job in the field, share concepts in wildlife and conservation science, and provide a peek behind the scenes of zoos and aquariums, so students can learn how they operate and what staff do on a day-to-day basis. Activities included discussions of education and career opportunities and job shadowing with zoo staff, which consisted of a variety of hands-on activities such as animal enrichment and exhibit design.

To further foster participants' engagement and interest in wildlife and conservation science, WCS provided a Parent Workshop for each cohort. Parents and guardians of participants were invited to a daylong session, held on a weekend day, so they could learn about *Bridging the Gap*, wildlife and conservation science education and career opportunities, the college admissions process, and how to encourage their children's interest in the field. WCS staff also provided instruction on the use of Naviance, an online tool for education and career exploration for students and parents. Each workshop had a target attendance goal of 25 parents or guardians.

Shortly after each School-to-Career Institute, a Career Building Institute was held for participants. This two-day event, held on a weekend, was intended to provide guidance on navigating the college application process, which included financial aid information and admission essay advice. In addition, staff offered insight into college life by demonstrating roommate conflict scenarios and an exercise on creating a course schedule.

After the end of the School-to-Career Institute, students took part in a structured mentoring program with zoo and aquarium staff. This component was intended to be an opportunity for students to interact one-on-one with zoo staff. Students were to be assigned to a zoo staff

member based on their interests. The mentoring component was meant as a way for students to establish relationships with professionals in the field, in order to receive continued support and advice specific to education and career pathways.

The final aspect of participants' formal involvement in *Bridging the Gap* was an on-site paid internship, each composed of 40-80 hours of work. Students were able to view internship options and were asked to rank their preferences and provide brief summaries of how their interests aligned with the job. Based on this information and available spots for each job type, staff did their best to place students into their first or second choice. Internships types varied, with many relating to animal care and zoo operations, working with children, science experiment design, computer activities, and photography.

Integrated throughout the program activities was a partnership with Good Shepherd Services (GSS), an organization focused on youth development in low-income communities in NYC. GSS offers a multitude of services geared toward keeping youth connected to their schools and families, and professional development for those working with youth. They not only assisted in the development of the activities and intended learning outcomes of the *Bridging the Gap* program and student recruitment, but also offered individual services to student participants who needed tailored support.

WCS also designed the program to continue informally after the required activities had ended. The intended activities included continued contact between WCS staff, mentors, and students via email, blogs,² and social media³. This continued contact was meant to track students' education and career choices and interests, as well as to offer them support and encouragement through their transition to college and/or a career. The ultimate goal of continued contact was to increase motivation of students to pursue further education and a career in wildlife and conservation science, as well as to reduce high school dropout rates.

All the described activities of the *Bridging the Gap* program allowed the project team to successfully meet Objective 1, implementation of a program that provides wildlife science content, hands-on experiences in science learning and research, career-building services, mentoring, and long-term tracking and support, as described by Research Question 1c.

Staff also accomplished several dissemination activities (Objective 4, Research Question 1d), including the creation of a comprehensive program description on the Bronx Zoo website⁴; an article and video in the *New Learning Times*, an online education publication of Columbia University⁵; and poster presentations about the program at the 2013 and 2014 Association of Zoos and Aquariums Annual Conference.

Program Changes

While the program was intended to be implemented as designed, adjustments were made along the way to accommodate unforeseen barriers. For example, in 2013, damage caused by

² <http://btgwcs.blogspot.com/>

³ https://instagram.com/BTG_zoo/; <https://www.facebook.com/pages/Bridging-The-Gap/549385131791205>

⁴ <http://bronxzoo.com/teens/bridging-the-gap>

⁵ <https://newlearningtimes.com/cms/article/1372>

Hurricane Sandy caused the New York Aquarium site to be unusable. This occurred during the recruitment process for Cohort 1; therefore, students were assigned to the remaining four sites. Site capacity limits only allowed for a total of 48 students in this cohort, instead of 50. The site was re-opened in 2014 and Cohorts 2 and 3 were spread out among all five sites.

After the end of Cohort 1, *Bridging the Gap* staff found that the mentoring aspect of the program was not producing the results they had intended. The one-on-one nature of the mentoring did not function well, as it overwhelmed already busy zoo staff. In addition, much of the communication and follow-up was to occur outside of the program, mainly via email. Several students were not responsive to emails and staff were unable to continually follow-up; therefore, communications declined. Mentor-mentee pairings were randomly assigned, so students and mentors did not always have a real connection, and may not have been inclined to stay in touch.

To remedy this, *Bridging the Gap* staff redesigned the mentoring component for Cohorts 2 and 3 into a "Community Mentoring" program. This was composed of one afterschool session per month (9 sessions per cohort), with all students at a site and several staff members in attendance. These were semi-structured, and began with facilitated group activities or discussions on various topics. Activities and discussions were also conducted in smaller groups, consisting of 3 or 4 students and a staff member. The final portion of each session allowed for informal discussion, where students had the opportunity to interact with staff one-on-one, or as a group. Because mentoring for Cohort 1 was not ideal, these students were invited to attend Cohort 2 and 3 sessions. Several Cohort 1 students participated in the Community Mentoring program. This redesign was intended to facilitate better interactions between mentors and mentees, to lessen the burden on staff to continually follow-up with students that were not interested, and to encourage group discussions.

Student Participant Profile

To answer Research Question 1a regarding enrollment of the targeted number and demographic profile of students, data were collected and analyzed via attendance records and the SAIQ. A total of 153 students were recruited to participate in *Bridging the Gap* activities over the course of the program. All 48 students recruited in Cohort 1 completed the main portion of the program, the School-to-Career Institute. During Cohort 2, 48 of the original 52 students completed the School-to-Career Institute. Finally, 53 students were recruited into Cohort 3 and 50 of those completed. Therefore, a total of 146 students completed the main activity, the School-to-Career Institute, over the 3-year program. Those students also completed the other program elements, including the Career Building Institute, the mentoring sessions, and the internships (Research Question 1b). Most students who did not complete the program were unable to do so due to external circumstances (e.g., too many extracurricular activities). While not all of the 153 students recruited completed the program, the vast majority did, allowing the staff to successfully meet Objective 2, recruitment of 150 students.

All three cohorts were made up of high school students who were similar in terms of grade level, with most in grades 10 and 11, and a few in grade 12. High school location and zip code of residence were self-reported by students on their pre-SAIQ. School location by borough was mixed; however, most students in the three cohorts attended school in Brooklyn or Manhattan. Students' residences were spread throughout the five boroughs and Long Island; however, the

majority reported living in the Bronx or Brooklyn. Several Cohort 1 students reported living in Queens, as well. These data indicate that the *Bridging the Gap* program was able to reach students from all boroughs, as was the intended goal. Table 1 displays grade level and location data by cohort.

Table 1. Student Grade Level, School Location, and Residence Location

Grade level	Number of responses		
	Cohort 1 (n = 48)	Cohort 2 (n = 45)	Cohort 3 (n = 51)
9	0	0	0
10	20	16	16
11	26	27	25
12	2	2	9
School location	Cohort 1 (n = 48)	Cohort 2 (n = 45)	Cohort 3 (n = 50)
Bronx	12	8	7
Brooklyn	11	10	20
Manhattan	13	20	17
Queens	12	7	8
Residence location	Cohort 1 (n = 47)	Cohort 2 (n = 44)	Cohort 3 (n = 51)
Bronx	15	13	16
Brooklyn	11	14	22
Long Island	0	2	0
Manhattan	5	8	4
Queens	16	6	9
Staten Island	0	1	0

Note. Residence location was determined based on students' self-reported zip code.

As shown in Table 2, the majority of students in all three cohorts were African American and/or Hispanic/Latino. Overall, more than half of all students participating in *Bridging the Gap* indicated they were Hispanic/Latino and approximately one-third indicated they were African American. This indicates that the program staff accomplished their goal to serve a minority population.

Table 2. Students' Self-Reported Race

Race	Number of responses		
	Cohort 1 (n = 48)	Cohort 2 (n = 45)	Cohort 3 (n = 51)
African American	13	13	19
American Indian/Alaskan Native	0	0	1
Asian	6	3	4
Hispanic/Latino	24	23	28
Native Hawaiian/Pacific Islander	1	0	0
White	3	0	3
Other ^a	3	6	2

Note. Respondents were able to choose more than one answer.

^a“Other” responses included African Caribbean, Arabian/Middle Eastern, Black/Caribbean, Dutch, Indian, Irish, Jamaican, Mixed, and Trinidadian.

While the program goal was to recruit minority high school students, research examined the students' background more in-depth. As indicated in Table 3, over half (61%) of students across all three cohorts spoke a language other than English at home at least half of the time (those who chose "half of the time" and "all or most of the time"). Forty-three percent spoke another language at home "all or most of the time." This indicates that most students in the program were likely bilingual. Student reports on their parents' education were mixed (see Table 4); however, over the three cohorts, the highest number indicated that their mother had graduated from college (39%). The highest number of students reported that they did not know their father's education (27%), but the next largest group indicated their father graduated from college (20%). Therefore, if the students pursue and complete a college education (a long-term program goal), a portion will likely attain more education than their parents.

Table 3. Non-English Spoken at Home

Frequency	Number of responses		
	Cohort 1 (n = 48)	Cohort 2 (n = 45)	Cohort 3 (n = 50)
Never	12	14	11
Once in a while	4	5	10
Half of the time	11	9	6
All or most of the time	21	17	23

Table 4. Parents' Level of Education

Level of education	Number of responses		
	Cohort 1 (n = 48)	Cohort 2 (n = 45)	Cohort 3 (n = 50)
Father's education			
Did not finish high school	12	9	10
Graduated high school	8	11	6
Some education after high school	8	5	6
Graduated college	10	8	11
I don't know	10	12	17
Mother's education			
Did not finish high school	7	4	9
Graduated high school	8	8	4
Some education after high school	11	16	6
Graduated college	17	16	23
I don't know	5	1	8

Last, student attendance at the School-to-Career Institute was tracked and made available to evaluators. Generally, all three cohorts had good attendance, with few absences and late arrivals. Those that were not present for sessions were given make-up assignments to cover the material they missed. Program staff noted that several absences, particularly in Cohort 2, were due to travel difficulties from inclement weather.

Research and Evaluation

To fulfill Objective 3, Hezel Associates designed a comprehensive study intended to inform program improvements by measuring short-term student and parent outcomes. In addition,

longer-term outcomes were examined (to the extent possible in the 3-year program) in order to inform the STEM informal education field.

The study design and methods used are described in the Methods section; however, as the program evolved, it became necessary to adapt portions of the evaluation to fit with the program. For instance, as Cohort 1 ended, WCS staff requested some adjustments to the SAIQ to ensure students had a clear understanding of the items, as described in the Methods section.

PROGRAM QUALITY

Students who participated in the *Bridging the Gap* program enjoyed the activities they engaged in and generally left with new knowledge of college life and the wildlife sciences field. Many also gained a new sense of confidence about the college application process and their transition into a career. Therefore, WCS provided education and support that was of quality for the participants (Research Question 2). Quality data related to specific program elements are discussed in the following paragraphs.

School-to-Career Institute

Students from all three cohorts generally rated the quality of the School-to-Career Institute sessions highly. On the 1-5 scale, most students chose 4 or 5 regarding overall quality and quality of the instruction, materials, content, organization, and schedule. Responses to the items regarding the difference between the School-to-Career Institute activities, content, and instruction from their experience in school were more mixed, with responses ranging from 1-5. This may indicate that some students did not perceive their experience as very different from school; however, the majority did. Since students attended several different high schools, this variation could be due to differences in coursework between the schools.

Additionally, students acknowledged specific aspects of the program that were noteworthy to them. Several students across all three cohorts mentioned animal interaction as a positive experience. They expressed that these interactions helped them expand their knowledge of animals and develop a respect for wild animals. Behind-the-scenes activities in the zoo, such as exhibit design, were a highlight for many students, which allowed them to learn about the day-to-day activities of zoo employees, as well as the overall societal importance of zoos. Numerous respondents from all cohorts remarked that they gained insight into zoo and wildlife science careers, which in turn helped spark interests and identify career paths. Some students, particularly in Cohorts 2 and 3, commented that they have a better understanding of environmental topics due to the School-to-Career Institute. The only negative aspect mentioned by some students in all cohorts was the weekend schedule.

Overall, findings regarding the quality of the School-to-Career Institute indicate that students perceived it as successful and worthwhile. Students' open-ended responses demonstrated that the goals of the sessions, including introducing students to zoo and wildlife science careers, disseminating knowledge of more in-depth science concepts, and illuminating behind-the-scenes zoo operations, were achieved across cohorts.

Career Building Institute

The three cohorts had similar opinions of the Career Building Institute, with almost all students giving each component a rating of 4 or 5 (on a 1-5 scale). Components included instructional quality, materials and resources, content, and scheduling. Cohort 3 data, not previously reported, are included in Table 6 of the appendix. All three cohorts gained substantial knowledge about the college application process and college life, including financial aid, creation of course schedules, and how to handle certain issues as a college student. They were most impacted by the roommate scenario, which allowed them to act out a difficult situation with a roommate, as well as other activities, such as the college essay writing exercise. Most students felt more comfortable with college after the sessions, stating, "My stress level about college and financial aid has dropped

significantly. However, a small number of Cohort 3 students showed the opposite effect, saying that they were "overwhelmed" and "scared" about college. The few complaints about the Career Building Institute were in regards to its timing and length, as some did not enjoy attending for two consecutive days on the weekend, and wished it had not been so long each day.

Overall, the students had positive reactions to the Career Building Institute. Staff successfully met the goals of the sessions, as students gained substantial knowledge about the college application process and aspects of college life.

Internships

Almost all students from each cohort completed their internships and rated aspects of their specific job highly. These included being given adequate orientation, instruction, and resources to perform internship duties and feeling comfortable approaching WCS support staff when needed. A small number felt that what they learned during their internship was not very different than what they learn in science class in school; however, the majority noted a difference. The majority of each cohort were also pleased with the amount of time the internship lasted, while others thought it did not last long enough. Cohort 3 data, not previously reported, are included in Tables 7 and 8 of the appendix.

Most students indicated that they learned a considerable amount from the specific activities they were asked to perform. The majority of these activities centered on zoo and animal-related tasks, such as grooming and exhibit care. Several also worked with younger children and participated in computer-related activities, such as website creation and social media. All three cohorts mentioned that they gained communication skills, particularly in working with the public, and several learned to be more patient and observant. Others were grateful to have been exposed to appropriate workplace behaviors, such as timeliness, time management, and how to dress for a job.

Overall, students seemed to enjoy their internships and learned several important technical and social skills. These jobs gave them real-world experience and likely helped to further strengthen relationships between students and zoo staff.

Mentorships

Across the three cohorts, the mentoring sessions were rated highly ($M > 4.2$). Questionnaire items focused on students' opinions of how willing their mentors were to give advice, how completely mentors answered their questions, the usefulness of the resources provided, their comfort level with their mentor, and how well the mentor helped their confidence in making education and career choices. Previously unreported Cohort 3 data are included in Table 9 of the appendix. While most ratings were high across cohorts, Cohort 1 had the lowest mean ratings for all items. Cohort 2 and 3 data not only had higher means, but almost all students rated each item as a 3 or higher; Cohort 1 was more mixed, with some students rating items as a 1. This difference may be due to the change in mentorship structure, as program staff designed the new mentor sessions in Cohorts 2 and 3 to address some concerns over lack of communication between mentor and mentee in Cohort 1.

Many students gave specific praise for the mentoring sessions, mentioning the usefulness of the “real life” activities and learning about staff experiences. Interaction with individuals who do specific jobs, such as veterinary technicians, gave students insight into the educational and professional steps needed to obtain the job, as well as what types of tasks make up a typical day. Many found value in these sessions and believe they have helped them to make decisions about further education and careers.

Ongoing Assistance

To explore student perceptions of ongoing assistance they received from WCS staff post-program, students were asked to rate various items, such as their interest in the program’s Facebook page and the frequency of and their comfort level with contacting WCS staff with questions. Cohort 3 data are included in Table 10 of the appendix. Ratings were relatively high for each cohort; however, the three groups consistently agreed the least that the Facebook page had interesting posts and that they checked in with WCS staff regularly. However, students appreciated the continued outreach from staff, particularly the regular emails and/or text messages. These updates were not only useful reminders of dates and times of activities, they also made them feel “more connected” with staff and the other students. Overall, it appears that students enjoy the continued contact with staff and find it useful.

Another important piece of the *Bridging the Gap* program was a partnership with GSS, who assisted with program development as well as offered individual services to student participants. According to the Ongoing Assistance Questionnaire responses, only a few students from each cohort had heard of the organization, and even fewer had used their services. When those who had used the services were asked to rate how well they were helped, responses were mixed. It is unclear how useful their services were to the students; however, it is assumed that those who did not need extra assistance likely did not pursue interactions with GSS.

STUDENT OUTCOMES

In regards to Research Question 4, the extent to which students realized affective and cognitive outcomes, the research and evaluation of the *Bridging the Gap* program revealed overall positive results. These included changes in students' knowledge regarding college life and the application process, the operation of zoos and aquariums, and opportunities for careers in the wildlife sciences field. Students' attitudes and behaviors related to these topics did not change substantially; however, this may manifest itself longer-term. In addition, Cohorts 1 and 2 showed indications that they were influenced by this program in relation to their long-term education and career choices and goals (Research Question 5). Program quality was also high (Research Question 2), as students overwhelmingly felt positive towards the various components.

Knowledge, Attitudes, and Behaviors

The SAIQ sought to measure students' perceptions of their own knowledge and attitudes regarding wildlife sciences and the college admissions process, as well as their self-reported participation in activities related to wildlife and conservation. Upon examination of pre- to post-School-to-Career Institute changes, the three cohorts were shown to have similar results.

Knowledge

The greatest positive changes in responses of the three cohorts from pre- to post-School-to-Career Institute were generally found in items related to knowledge of zoo operations and careers. In particular, large increases were seen in understanding what zoo professionals do in their daily work and activities related to specific areas of zoo work, how zoos have changed over time, and how zoos manage captive populations of animals. This indicates that across the cohorts, students' participation in the program likely helped them gain insight into zoo operations, successfully addressing their goal of educating students about zoo careers.

For all participants, there was little change in their knowledge of science topics, such as photosynthesis, the food chain, and natural selection. This is likely because these topics are typically taught in high school science courses, so the *Bridging the Gap* program may not have helped them learn new information on these topics. However, any discussion could have provided reinforcement of the subject, which is still beneficial for students.

Knowledge of the college admissions process generally increased only slightly or showed no change among the three cohorts. While familiarizing students with this process is a goal of the program, the topic was covered more in-depth during the Career Building Institute, which occurred after the School-to-Career Institute. Therefore, the slight changes indicated from the SAIQ are expected, as it measured changes over the course of the School-to-Career Institute, which did not cover this area in great detail.

Attitudes

Participants' attitudes changed little or not at all over the course of the School-to-Career Institute. Attitudes examined included dispositions towards education, such as their belief that doing well in high school is important for getting a good job and belief in their ability to get into college, as well as those related to zoo careers (e.g., confidence in ability to carry out zoo job-specific tasks). However, ratings for most of these items were generally high (>3.5) on the pre-SAIQ across all cohorts; therefore, a ceiling effect may have occurred, where pre-responses were

so high that there was little room left to increase in the post-responses. In addition, like students' knowledge of the college admission process, these slight changes in attitudes about education and careers were expected.

Behaviors

Data pertaining to students' participation in nature-related activities were mixed. Because the response options for these items on the SAIQ were changed from Cohort 1 to Cohort 2 and 3, comparisons are not straightforward. Examining Cohort 2 and 3 data, students most often indicated that they participated in watching videos (television, web media) and visited websites related to nature and/or wildlife. In contrast, the fewest amount of students indicated that they joined nature/science networking websites or a club. These data changed little from pre- to post-SAIQ.

The activities on the SAIQ were intended to illuminate any behavior changes that would help in students' preparation for science and/or zoo careers. The lack of changes may be due to the fact that the School-to-Career Institute was only the initial component of the *Bridging the Gap* program, and changes may have occurred after completion of other elements (e.g., Career Building Institute). The list of activities is also not exhaustive; therefore, there are likely other activities students participated in that were not covered by the SAIQ.

Long-Term Impact

Since the *Bridging the Gap* program began only 3 years ago, long-term impacts of the program are not yet apparent. However, evaluators followed up with students from Cohorts 1 and 2, one and two years after completing the program to ascertain their educational and career goals, as well as their lasting impressions of the program. Sixteen Cohort 1 students completed the questionnaire 1 year after completion, and 14 responded 2 years after completion. Thirty-three Cohort 2 students responded 1 year after completion. Data from the second administration to Cohort 1 and the first to Cohort 2 were not previously reported. These data are included in the appendix.

Most students who responded were still in high school at the time of questionnaire completion. The majority indicated that they intend to attend college to pursue a 4-year degree after graduation, and the majority had already applied to multiple colleges. Of those who had applied to colleges, several had been accepted by one or more; however, only few had made a decision on which they will attend.

Those planning on going to college conveyed varying interests in the major they would like to pursue; however, the majority in both cohorts indicated science as an interest. Some also selected areas related to science, such as engineering/technology and healthcare. Delving deeper into the majors that appealed to them, those who chose science noted that they are interested in fields such as biology and zoology, as well as astronomy, chemistry, and physics.

Nine students who completed the questionnaire from Cohort 1 indicated that they were currently in college, while none from Cohort 2 were in college yet. Of those, most were enrolled in a science or technology program, while a few enrolled in law, liberal arts, or a social services

program. Almost all of these students believed they were doing well academically, rating their performance at above average or excellent.

All students were asked to select career fields they are interested in. These answers varied, but Cohort 1 students most often chose life, physical, and social science, followed by education, entertainment and sports, and math. Cohort 2 students also most often chose the sciences, as well as healthcare. Open-ended responses included specific career interests such as zoo keeping, aquaculture, veterinary medicine, ecology and evolution, and computer science and engineering.

Lastly, the majority of Cohort 1 and 2 respondents expressed that the *Bridging the Gap* program did affect their post-high school decisions and interests. Several noted that the program expanded their love and fascination with animals and gave them exposure to more professions than what I had always imagined were available in the world of zoology. Many also felt that the general college preparation was invaluable and provided them with needed support to pursue further education.

While these data represent a small subsection of the 146 students who completed the *Bridging the Gap* program, and there has not been sufficient time since program end to fully understand long-term impacts, findings point towards progress toward achieving program goals. Specifically, a positive trend was revealed towards achievement of Objective 6: Minority students will realize longer-term outcomes that put them on a path toward pursuing science careers in zoo. While not all students will pursue specific zoo careers, data indicate that this program may have influenced their decision to continue their education and helped them feel more confident and prepared to do so.

PARENT OUTCOMES

In regards to Research Question 3, parents and/or guardians of each cohort of *Bridging the Gap* students realized new knowledge and slight affective changes over the course of their respective workshops and were overwhelmingly pleased with the quality of the session. This further informs the achievement of Objective 1, in which the program was not only developed, but with quality. In addition, parents' knowledge gains may translate into students' further attainment of the intended affective, cognitive, and behavioral outcomes (Objective 5), as well as their long-term path toward a STEM career (Objective 6).

Parent Workshop

The three one-day parent workshops were well attended, with more than the targeted 25 parents or guardians attending each (see Table 5). Across the three cohorts, responses to the parent questionnaire were similar. Most reported substantial increases in their knowledge of the *Bridging the Gap* program and their understanding of career opportunities in wildlife science. In particular, the greatest increases were seen in their understanding of Naviance and its applicability to their child's education and career aspirations, as well as their confidence in and likelihood of using Naviance. The three cohorts also indicated an increase in their understanding of the college admissions process.

All three cohorts reported little affective change in their interest and support of their child's science education over the course of the workshop. Most indicated a high level of interest and support before the workshop, so large increases were not possible. However, there were increases in their knowledge of ways they could support their child's interests. This suggests that while most parents were already interested and supportive of their child's interests and education, the workshops helped them to identify ways they can put their interest and support into practice.

While most responses were similar, Cohort 1 parents showed less of an increase in their confidence in using Naviance. In fact, some indicated low confidence both before and after the workshop, while all Cohort 2 and 3 parents indicated a medium to high confidence level after the workshop. This suggests that conveyance of Naviance information may not have been as effective for Cohort 1. Also, while the majority of parents across all cohorts indicated a medium-high to high understanding of careers opportunities in wildlife science after the workshop, more Cohort 2 parents than the other cohorts indicated a low understanding before the workshop.

Table 5. Parent Workshop Participants

Cohort	Workshop date	Number of participants
1	March 2013	36
2	November 2013	28
3	October 2014	30

Overall, the intended goals of the three parent workshops were successfully met. These included learning about:

- The *Bridging the Gap* program, zoo operations, and wildlife science career opportunities
- The importance of their expectations, attitudes, and involvement in their child's education

- Parent-school interactions
- The college admissions process
- Ways to foster their child's interest in science

In addition, across all three cohorts, a large majority of parents and/or guardians who attended the workshop rated the quality favorably. Parents' open-ended responses highlighted their appreciation of WCS staff, as well as the usefulness of the information given regarding the college admissions and financial aid processes, and the Naviance program.

CONCLUSIONS

The *Bridging the Gap* program, developed and implemented by WCS, was successful in meeting its overall goals and objectives over the course of the 3-year project. The attainment of each objective are discussed below.

Objective 1. Develop a science career program for minority high school students that provides wildlife science content, hands-on experiences in science learning and research, career-building services, mentoring, and long-term tracking and support

WCS successfully developed and implemented a comprehensive program for minority high school students, which included elements that provided information on wildlife science, zoo operations, and conservation, as well as college preparation. These included several hands-on and interactive activities, such as exhibit design and animal enrichment development, integrated throughout the duration of the School-to-Career Institute and student internships. Specific information on relevant careers and college preparation was delivered to students during the Career Building Institute. Structured mentoring sessions were provided for each cohort, connecting the students with zoo staff. Long-term support was also an important piece of the program, with maintained contact between WCS staff, zoo staff mentors, and students via email and social media.

These elements were not only developed and implemented, but were delivered with quality. Student reactions to all program elements showed that they not only enjoyed the program, but learned considerable information that they will carry with them into the future. Therefore, the program not only achieved Objective 1, but exceeded it by providing quality education and support for the participants.

Objective 2. Recruit 150 minority students to participate and complete the program

Across the three cohorts, a total of 153 students were recruited into *Bridging the Gap*. Of these, 146 completed the program components. More than 95% of these students identified themselves as minority, most of which were African American and/or Hispanic/Latino. Therefore, the program successfully met Objective 2 by recruiting and serving the intended population.

Objective 3. Carry out an extensive research study that will closely analyze the project, measure its short- and longer-term outcomes, suggest needed modifications, inform the science education field of outcomes and lessons learned, and expand the research base on the use of informal science resources in STEM career preparation for minority students

To fulfill Objective 3, Hezel Associates designed a comprehensive study intended to inform program improvements by measuring short-term student and parent outcomes. The research and evaluation provided information on specific components of the program, allowing for tailored recommendations for any mid-course corrections. In addition, longer-term outcomes were examined (to the extent possible in the 3-year program), which have the potential to inform further research into informal STEM education and career preparation for minority high school students.

Objective 4. Disseminate the project and its results to zoos, aquariums, and other informal science institutions across the U.S.

Several dissemination activities were undertaken by project staff, such as the creation of a program description on the Bronx Zoo website, various online articles and videos regarding the program, and poster presentations about the program at the 2013 and 2014 Association of Zoos and Aquariums Annual Conference. These publications and presentations have not only included a program overview, but have also incorporated data from the research and evaluation to show student outcomes. Project staff have effectively met Objective 4.

Objective 5. Assist minority students in achieving the targeted affective, cognitive, and behavioral outcomes necessary to prepare them for science careers in zoos

Students showed overall positive changes in their knowledge regarding college life and the application process, the operation of zoos and aquariums, and opportunities for careers in the wildlife sciences field. Students' attitudes and behaviors related to these topics did not change substantially; however, these may manifest themselves in the future. While it is not possible to measure students' career preparation directly due to the limited research and evaluation timeframe, several students from each cohort specifically stated that they felt more confident and ready to attend college, select a career, and work in the wildlife science field. These data indicate that the project staff achieved Objective 5.

Objective 6. Help minority students realize longer-term outcomes that put them on a path toward pursuing science careers in zoos

There has not been sufficient time since program end to fully understand long-term impacts; however, findings suggest a positive outlook for achieving outcomes that will put students on a path to an established zoo career. While not all students stated they will pursue specific zoo careers, data indicate that this program may have influenced their decision to continue their education and helped them feel more confident and prepared to do so. This program appears to have given students new ideas, resources, and opportunities, allowing for a more informed education and career decision. Progress toward Objective 6, while not fully realized, has displayed a positive trend.

RECOMMENDATIONS

The *Bridging the Gap* program has reached the end of its NSF-funded activities. Hezel Associates recognizes that this project had several successes over the course of the grant period. While it is understood that the program will not likely continue in its current form, we offer the following suggestions for further program development and implementation, post-NSF funding.

Continue broad dissemination of project outcomes. While staff have made strides in disseminating project information, it is recommended that they continue to seek out and pursue additional avenues of dissemination, as possible. Sharing program design and the outcomes achieved will not only give the program well-deserved attention, but can help to connect with additional funding or resources. Audiences to focus on include, but are not limited to, the STEM education and informal science community, schools in NYC and/or beyond, the zoo/aquarium community, universities, high school students, local media, and the general public. Potential opportunities to share information about the program include:

- Presenting at STEM education conferences, such as those hosted by the North American Association for Environmental Education (NAAEE) and the National Association for Research in Science Teaching (NARST);
- Submitting articles to peer-reviewed journals for publication in STEM education or information education-related research journals, such as the Journal of STEM Education, the International Journal of Science Education, and Science Education;
- Writing blogs and/or articles for websites centered around ITEST (e.g., STELAR⁶), informal science learning (e.g., CAISE⁷), STEM learning, and zoo/aquarium issues; and
- Sending press releases of program outcomes to local media outlets.

Use data to identify essential components in order to consider continuation of a modified program. It is assumed, with the success of the last three years, that WCS is interested in sustaining *Bridging the Gap* to some extent. Without the current funding source, however, it is unlikely the program can continue in its current form. That said, it is important to review data from this project to identify which, if any, elements of the program are most effective and most feasible to maintain. For example, students were provided information about several diverse topics during the Career Building Institute, such as science- and animal-related information, zoo operations insight, college life exposure, and advice on the college application process. These sessions showed positive results, as students were pleased with what they learned and were positively impacted both cognitively and affectively. In terms of efficiency, the Career Building Institute consisted of relatively brief informational sessions that provided several distinct lessons to students effectively. Therefore, adapting this component as a regular educational offering, while less comprehensive than the full *Bridging the Gap* program, could be more feasible in terms of cost and staff resources, and still have an impact on students' lives.

Develop a strategy to track Bridging the Gap students long-term. In order to successfully secure additional funds to continue elements of the *Bridging the Gap* program, it is essential to have access to long-term impacts on the participants. The time limitations of the current project prevents this; however, WCS could consider methods of keeping track of students' outcomes as they progress through high school, into college, and into careers. This begins with keeping a

⁶ <http://stellar.edc.org/>

⁷ <http://informalscience.org/>

directory of student and parent contact information (with parental consent) and maintaining that directory to the extent possible. With contact information, WCS could informally contact students to inquire about their college and career outcomes to get anecdotal data, or they can develop more structured online questionnaires in order to collect consistent data across the former students. Developing a strategy for gathering further outcome data not only helps with the *Bridging the Gap* program, but could be integrated into other WCS educational programs. Streamlining the process of data collection, analysis, and long-term data tracking and maintenance across WCS programs can allow for easier access to data for grant applications and dissemination to others. Hezel Associates recommends that WCS investigate the integration of a long-term tracking system, such as the use of customized databases and questionnaires. While this avenue will require resources and funding, it will likely create efficiencies across the organization and could assist with securing additional funds.

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APPENDIX: COHORT 3 DATA

Cohort 3 Career Building Institute

Table 6. Cohort 3 Career Building Institute Quality Ratings

	Mean rating (n = 36)
Overall rating Career Building Clinic	4.72
Quality of the instruction	4.72
Quality of the materials and resources provided	4.86
Quality of the content presented	4.86
Organization of the activity	4.78
Schedule and timing of the activity	4.47
Overall rating of the workshops	4.81
Overall rating of the individual consultations	4.81

Cohort 3 Internships

Table 7. Cohort 3 Internships Quality Ratings

	Mean rating (n = 46)
I liked my internship.	4.83
At the beginning of my internship, I was told what my duties were and who my supervisor was.	4.78
I was given enough instruction to prepare me to do my internship duties.	4.87
I was given enough materials and resources to perform my internship duties.	4.91
I liked that the activities I did in my internship were different from activities I do at school.	4.78
What I learned during my internship was different than what I learn in science classes at school.	4.58
I felt comfortable going to WCS support staff for help if I needed it.	4.85

Table 8. Cohort 3 Internship Activities

	Number of responses (n = 46)
Zoo/animal-related	44
Computer activities	26
Science-related activities	22
Work with children	12
Arts and crafts	8
Other	23

Note. Students were each asked to indicate up to three activities.

Cohort 3 Mentorships

Table 9. Cohort 3 Mentorship Ratings

	Mean rating (n = 45)
Overall, the mentorship assistance was helpful.	4.47
I was satisfied that my mentor(s) answered my questions completely.	4.49
The resources my mentor(s) suggested for me (websites, activities, publications, etc.) were useful.	4.44
My mentor(s) was willing to give me advice and answer my questions.	4.58
The mentorship has made me feel more confident in making decisions about my future education and career.	4.40
I felt comfortable asking questions of the mentors.	4.51

Cohort 3 Ongoing Assistance

Table 10. Cohort 3 Ongoing Assistance Quality Ratings

	Mean rating (n = 45)
Overall, the ongoing program assistance I have received was useful.	4.51
The guidance I was provided was helpful.	4.57
The materials and resources I was provided were useful.	4.57
I felt comfortable emailing <i>Bridging the Gap</i> staff with questions.	4.44
The program's Facebook page had interesting postings.	3.58
I checked in with WCS staff regularly.	3.91

Cohorts 1 and 2 Long-Term Data

Most students who took the Long-Term Questionnaire, from both administrations to Cohorts 1 and 2, were not yet in college. Tables 11-14 show data regarding college plans and interests of students not yet in college.

Table 11. Plans after High School

Activity	Number of responses		
	Cohort 1, #1 (n = 7)	Cohort 1, #2 (n = 5)	Cohort 2 (n = 16)
Attend college	7	4	15
Find a full-time job	2	0	0
Find a part-time job	5	0	0
Join military	0	1	1
Be a stay at home parent	0	0	0
Not sure	1	0	1
Other	0	0	0

Note. Respondents were able to choose more than one answer.

Table 12. College Preparation Activities

Activity	Number of responses		
	Cohort 1, #1 (n = 7)	Cohort 1, #2 (n = 2)	Cohort 2 (n = 6)
Visited colleges	5	1	3
Attended college workshops other than <i>Bridging the Gap</i>	4	0	1
Started the college application process	4	1	0
Requested letters of recommendation from <i>Bridging the Gap</i> staff	1	0	0
Requested letters of recommendation from someone other than <i>Bridging the Gap</i> staff	2	0	1
Not sure	2	0	1
None of the above	1	0	0
Other	0	0	0

Note. Respondents were able to choose more than one answer.

Table 13. College Major Interest

Major	Number of responses		
	Cohort 1, #1 (n = 7)	Cohort 1, #2 (n = 6)	Cohort 2 (n = 16)
Art	1	0	0
Business/Finance	2	0	0
Education	2	0	0
Engineering/Technology	2	1	1
Healthcare (Pre-med, Nursing, Occupational Therapy, etc.)	0	0	1
Law	1	0	3
Liberal Arts (English, Philosophy, Political Science, etc.)	1	1	0
Math	2	0	0
Science	4	4	7
Social Services (Counseling, Psychology, etc.)	2	0	1
Not Sure	1	0	1
Other	0	0	2

Note. Respondents were able to choose more than one answer.

Table 14. Science Field Interest

Science Field	Number of responses		
	Cohort 1, #1 (n = 4)	Cohort 1, #2 (n = 2)	Cohort 2 (n = 5)
Astronomy	2	0	0
Biology	2	0	1
Chemistry	2	1	0
Environmental Science	1	0	1
Forensic Science	1	0	1
Geology/Earth Science	0	0	0
Physics	2	0	0
Veterinary Medicine	0	1	0
Zoology	2	0	0
Not sure	0	0	0
Other	0	0	2

Note. Respondents were able to choose more than one answer.

All respondents, regardless of whether they were in high school or college, were asked about their career interests, as displayed in Table 15.

Table 15. Career Interests

Career Field	Number of responses		
	Cohort 1, #1 (n = 16)	Cohort 1, #2 (n = 10)	Cohort 2 (n = 14)
Architecture and Engineering	3	1	0
Arts and Design	1	0	0
Business and Financial	3	0	0
Community and Social Service	0	1	0
Computer and Information Technology	3	0	1
Education, Training, and Library	4	0	0
Entertainment and Sports	4	0	0
Farming, Fishing, and Forestry	0	1	1
Food Preparation and Serving	0	0	1
Healthcare	2	2	4
Legal	2	0	3
Life, Physical, and Social Science	6	3	4
Management	1	0	0
Math	4	0	1
Media and Communication	3	0	0
Military	2	1	1
Office and Administrative Support	1	0	0
Personal Care and Service	1	0	0
Not sure	0	1	1
Other	0	0	1

Note. Respondents were able to choose more than one answer.

Respondents who were in college at the time of questionnaire administration were asked to indicate their major and rate their academic performance, as seen in Tables 16 and 17. No Cohort 2 students were enrolled in college yet.

Table 16. College Major

Major	Number of responses		
	Cohort 1, #1 (n = 9)	Cohort 1, #2 (n = 4)	Cohort 2 (n = 0)
Art	0	0	0
Business/Finance	0	1	0
Education	0	0	0
Engineering/Technology	2	1	0
Healthcare (Pre-med, Nursing, Occupational Therapy, etc.)	2	0	0
Law	1	0	0
Liberal Arts (English, Philosophy, Political Science, etc.)	1	0	0
Math	1	0	0
Science	1 ^a	0	0
Social Services (Counseling, Psychology, etc.)	1	2	0
Not Sure	0	0	0
Other	0	0	0

^aBiology

Table 17. Self-Reported College Academic Performance

Performance level	Number of responses		
	Cohort 1, #1 (n = 9)	Cohort 1, #2 (n = 4)	Cohort 2 (n = 0)
Excellent	5	1	0
Above average	1	2	0
Average	2	1	0
Below average	0	0	0
Extremely poor	0	0	0
Not sure	1	0	0