

BRIDGE TO EMPLOYMENT IN THE REARVIEW MIRROR:

Alumni Perspectives on a College and
Career Readiness Program

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About FHI 360: FHI 360 is a nonprofit human development organization dedicated to improving lives in lasting ways by advancing integrated, locally driven solutions. Our staff includes experts in health, education, economic development, youth, research and technology—creating a unique mix of capabilities to address today's interrelated development challenges.

About the National Institute for Work and Learning: The FHI 360 National Institute for Work and Learning (NIWL) works at the nexus of education and employment systems, promoting their integration to ensure lifelong learning and productive work for all. NIWL seeks to build the capacity of public and private organizations, providing information, resources, and support needed to make decisions, strengthen programs, and improve outcomes for individuals.

INTRODUCTION

The best indicators of success in a college and career readiness program are the extent to which its participants achieved their higher education and career goals. This study takes a unique, in-depth look at one such program—Bridge to Employment (BTE)—by examining how it influenced participants' lives since graduation. BTE alumni, culled from a span of almost 15 years, were asked to consider how the program affected their higher education, career, and community service decisions.

The BTE program, a Johnson & Johnson program managed by FHI 360's National Institute for Work and Learning (NIWL) since 2003, works with 14- to-18-year-old students in disadvantaged communities in the United States and across the globe to increase the students' awareness and understanding of health careers and educational opportunities beyond high school/secondary school. Although BTE has operated for 25 years, examination of participants' experiences after they complete the program and graduate from high school/secondary school has been limited. There has been a lack of consistent longitudinal analysis because of the difficulties sites have in maintaining contact with graduates.

This study surveyed more than 500 BTE alumni who completed the program between 2004 and 2016 (obtaining an 10 percent response rate) and conducted interviews with 23 alumni to obtain in-depth information.¹The study findings are based on alumni's reflections on the effects of the BTE program in their lives since graduation. These findings are intended to provide insights to the college and career readiness field about promising strategies and practices. In addition, the findings will inform Johnson & Johnson and FHI 360 about the longer-term impact of the program.

¹ FHI 360 oversees a database of participant information and drew on this to create an alumni contact list of 522 former participants from the past 13 years.

What do we know about college and career readiness programs?

Research on college and career readiness programs primarily has focused on outcomes within high school such as student academic achievement or graduation rates. The studies of postsecondary outcomes for college and career readiness program participants are somewhat more limited and can be challenging to quantify, due to the variety of research methods used and the different types of programs examined—including college and career preparatory programs,² career academies,³ career development interventions,⁴ and programs of study.⁵ Many studies however, show promise. With regard to education-related postsecondary outcomes, there are a number of studies of the federal TRIO programs.⁶ A 2016 U.S. Department of Education, Office of Postsecondary Education study of Upward Bound and Upward Bound Math-Science⁷ found that 86 percent of one program cohort enrolled immediately in a postsecondary education program; however, no comparative data were available (Heuer et al., 2016). An earlier randomized assignment study conducted by Mathematica Policy Research (Seftor, Mamun & Schirm, 2009) found that Upward Bound had no effect on postsecondary enrollment or the likelihood of earning a bachelor's or associate's degree, but did find positive effects among the subgroup of students with lower educational expectations. The Massachusetts Department of Education (2014) studied students within another TRIO program, GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs),⁸ and found the program had positive effects on participants' college enrollment and retention in Massachusetts—92 percent of the GEAR UP students who enrolled in four-year colleges after graduation returned for their sophomore year. Taking a

2 Programs supporting students to (as David Conley [2012] defines college and career ready) qualify for and succeed in entry-level, credit-bearing college courses leading to a baccalaureate or certificate, or career pathway-oriented training programs without the need for remedial or developmental coursework. http://www.avid.org/dl/eve_natcon/nc12_four_keys_handout2.pdf

3 Career academies are either a stand-alone school or a distinct academic program housed within a larger school that emphasizes and builds its academic program around specific academic disciplines, professional fields, or career paths such as science and engineering. <http://edglossary.org/theme-based-academy/>

4 Programs that aim to help students make more informed and better educational and career choices—including information on high school course offerings, career options, the type of academic and occupational training needed to succeed in the workplace, and postsecondary opportunities that are associated with their field of interest. <https://www2.ed.gov/about/offices/list/ovae/pi/cte/guidcoun2.html>

5 The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins) calls upon states to create sequences of academic and Career Technical Education coursework to help students attain a postsecondary degree or industry-recognized certificate or credential, otherwise known as programs of study (POS). <https://careertech.org/programs-study>

6 The Federal TRIO Programs include eight outreach and support programs targeted to help low-income individuals, first-generation college students, and disabled individuals progress from middle school to higher education. <http://www.ncsl.org/research/education/college-preparatory-programs-types-of-programs.aspx>

7 The goal of Upward Bound and Upward Bound Math-Science programs is to increase the rate at which participants complete secondary education and enroll in and graduate from a program of postsecondary education. The UBMS program has an additional goal of helping students recognize and develop their potential to excel in math and science, as well as encouraging them to pursue both postsecondary degrees and, ultimately, careers in math and science. <https://www2.ed.gov/programs/trioupbound/ub-ubms-outcomes2016.pdf>

8 GEAR UP is a federal program established by Congress as part of the 1998 reauthorization of the Higher Education Act.

look at career academies, analysis of California school district and university records showed that career academy graduates were more likely to attend a four-year college compared to non-academy peers (Maxwell & Rubin, 2000), and were also more likely than non-academy graduates to complete their bachelor's degrees (Maxwell, 2001). A mixed-methods longitudinal study of secondary to postsecondary programs of study (POS) found that the number of POS courses taken in high school was significantly linked to earning a college credential (Alfeld & Bhattacharya, 2013).

Regarding career-related postsecondary outcomes, a 2008 MDRC randomized control study examined the effects of career academies and found significant gains in the labor market for academy graduates. Eight years after graduation, academy graduates had higher employment rates and earnings than non-academy graduates (Kemple & Willner, 2008). A seven-year study of California's Linked Learning⁹ initiative showed that one year post-graduation, participants were more likely than non-participants to obtain jobs with benefits (Warner, et al., 2016). Qualitative studies of career development interventions demonstrate their importance in supporting successful labor market transitions and highlight how such things as students' ability to organize course studies around meaningful career goals, and student awareness of their own interests and abilities can lead to increased postsecondary completion rates, and employment in one's field of choice (Lapan, et al., 2007; Bell & O'Reilly, 2008; Baker & Taylor, 1998; Blustein, et al., 1997).

Continued research to examine how college and career readiness programs benefit students is necessary (Brand, 2009; Bell & O'Reilly, 2008; McGannon, Carey & Dimmit, 2005; Hooley, et al., 2011; Venezia & Jaeger, 2013). This study aims to add to the current research by providing an in-depth look at a health-focused college and career program. The population of alumni offer perspectives ranging from recent graduates to those with more than 10 years of postsecondary experience. In addition, this study examines not just the alumni's accomplishments after secondary school but provides a rich description of their insights and opinions on how the BTE program influenced their education, careers, community service, and their lives.

9 Linked Learning pathways are designed to integrate four core components: rigorous academics, career technical education courses, work-based learning that provides exposure to real-world workplace, and comprehensive support services. https://www.sri.com/sites/default/files/publications/sri_year_7_linked_learning_evaluation_report_0.pdf

BACKGROUND

Johnson & Johnson's family of companies employs more than 125,000 people in its corporate offices and at local operating companies in more than 60 countries. Johnson & Johnson supports many community-based programs and promotes employee engagement following its *Credo*, a statement of principles established in 1943: "We are responsible to the communities in which we live and work and to the world community as well."

Bridge to Employment is one of Johnson & Johnson's signature initiatives. Launched in New Brunswick, New Jersey in 1992, BTE is a youth development program that has now served at-risk students in more than 80 communities in 19 countries around the world. In each community, the program serves 35 to 50 students in their last three years of secondary school and offers progressively intensive program activities that focus on academic enrichment, career awareness, higher education readiness, and community engagement in order to:

1. Increase in the number of youth attending and completing higher education.
2. Increase in the number of youth pursuing careers in the health industry or science, technology, engineering, mathematics, manufacturing, and design (STEM2D) sectors.

Each BTE program capitalizes on the strengths and resources of four cross-sector community partners:

- Johnson & Johnson local operating company
- Secondary school
- Institution(s) of higher education
- Community-based organization(s)

Although each site is unique in its structure and implementation, BTE program excellence stems from its common core of school-to-career principles. Programming at each site is led by a coalition of the community partners. Each site's activities are designed to provide participants with real-world experiences that increase their academic knowledge and expose them to the variety of options in college and careers. In some sites, this takes the form of site visits or tours of Johnson & Johnson facilities and institutions of higher education or skill-building workshops; in others, there may be weekly academic tutoring, guest lectures, or a sustained mentorship of students by Johnson & Johnson employees. Community service activities help youth understand

the importance of giving back to their communities. These methods provide opportunities for meaningful contextual learning, connect participants with adults in the workplace, and support the development of key college and career readiness skills.

Johnson & Johnson partners with FHI 360—an international nonprofit human development organization dedicated to improving lives in lasting ways by advancing integrated, locally driven solutions. FHI 360's NIWL provides overall management and administration for the global BTE program, offers technical assistance and resources to each local community, and provides capacity-building support to community partners in local BTE programs.

WHAT IS COLLEGE & CAREER READINESS?

BTE is a college and career readiness program steeped in strategies and tools from the current research and practice in the field. In recent years, experts have been questioning and expanding definitions of college and career readiness. *College and Career Readiness: A Guide for Navigators* (Warren, White, Charner, Johnson, McMahon & McMahon, 2017) explains that college readiness and career readiness are not one in the same but have important elements in common. Warren and her co-authors assert, “Planning for a successful future requires an integrated approach that helps students understand both their education and career options and opportunities.” The guide also identifies three key elements of college and career readiness:

- Integrated education and career planning and preparation.
- Ability to apply and link academic, technical, and career knowledge and skills.
- Foundational (soft) skills for postsecondary academic and career success.

Additional strategies noted as integral in preparing students for both college and careers include realigning courses toward professional priorities and creating partnerships between postsecondary institutions and businesses (Connelly & McGaughy, 2012) as well as differentiating curricula to support students' interests and talents (Barnes & Slate 2013; Wang 2013).

Across the college and career readiness literature, studies show that foundational skills are essential. A recent study released by FHI 360, Child Trends, Workforce Connections, and the United States Agency for International Development USAID (Lippman, Ryberg, Carney & Moore, 2015) outlines five skills key to postsecondary academic and career success: communication skills, higher-order thinking skills, self-awareness, self-management, and social skills. An earlier study (Lombardi, Seburn & Connelly, 2011) found that “goal-driven behaviors, persistence, study skills, and self-monitoring,” improve students’ success. Similarly, Dymnicki, Sambold, and Kidron (2013) described the importance of “social and emotional learning skills”—self-management, social awareness, relationship skills, and responsible decision making—in students’ readiness for college and careers and asserted that these skills can be taught in schools through specific policies and programs. In another study (Kyllölen, Lipnevich & Burrus, 2014), personality traits such as conscientiousness, extraversion, and openness were identified as part of a framework to assess students’ emotional readiness for academic pursuits.

College and career readiness experts also point out that students need practical education and career planning skills and assistance (ACT 2015; Warren, et al., 2017). America’s Promise Alliance (2017) highlights the importance of relationships in guiding students through this process, and Warren et al. (2017) use the term “navigators” to describe the adults who help students explore their options, develop college and career readiness knowledge and skills, and plan their future college and careers paths. FHI 360 recently published *Celebrating the BTE Story: 25 Years, 25 Lessons* (2017), a report that distills the BTE program’s years of experience into promising strategies. This report underscores the significance of helping students find role models, tapping into networks to broaden students’ horizons, and exposing students to a range of education, training, and career options and opportunities.



STUDY FINDINGS

Where are they now?

The tables below outline the accomplishments of the alumni study participants since graduating from BTE.¹⁰ The majority of alumni have enrolled in or graduated from institutions of higher education and are pursuing or plan to pursue a STEM²D career.

Survey respondents (N=54)

HIGHER EDUCATION	ADVANCED DEGREE	STEM ² D CAREER
35 (65%) currently enrolled in or have graduated from a four-year college or /university	5 (9%) obtained advanced degrees	28 (55%) work or plan to work in STEM ² D 2 (4%) are currently J&J employees

Survey respondents (N=23)

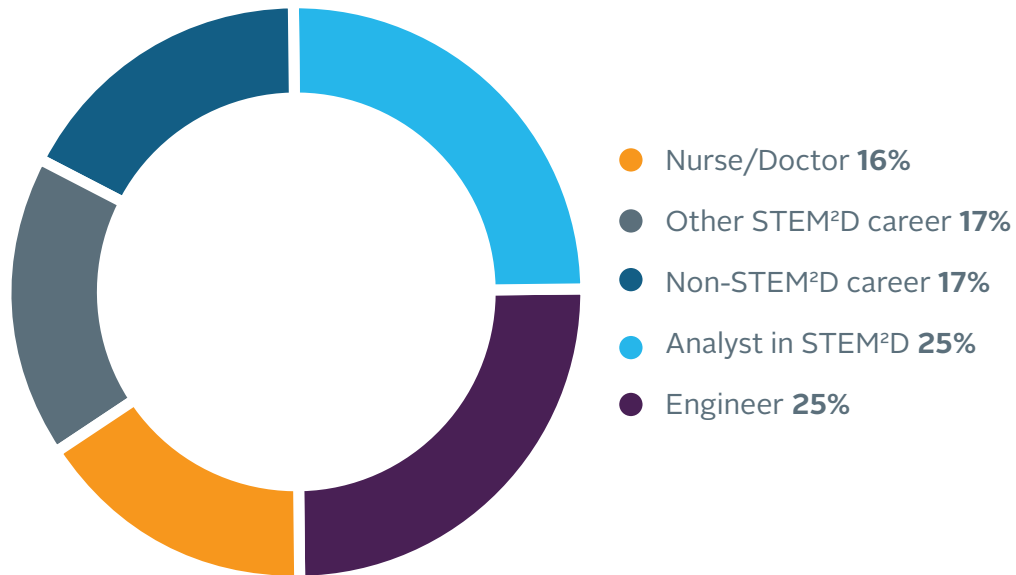
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** Of remaining alumni, 1 directly pursued career of choice, 2 about to enroll in higher education*

¹⁰ See Appendix B for demographics of study participants

The following chart shows the career roles of the 12 interviewees who are currently working.

Interviewees' current area of work (n=12)



BTE Influence on Education

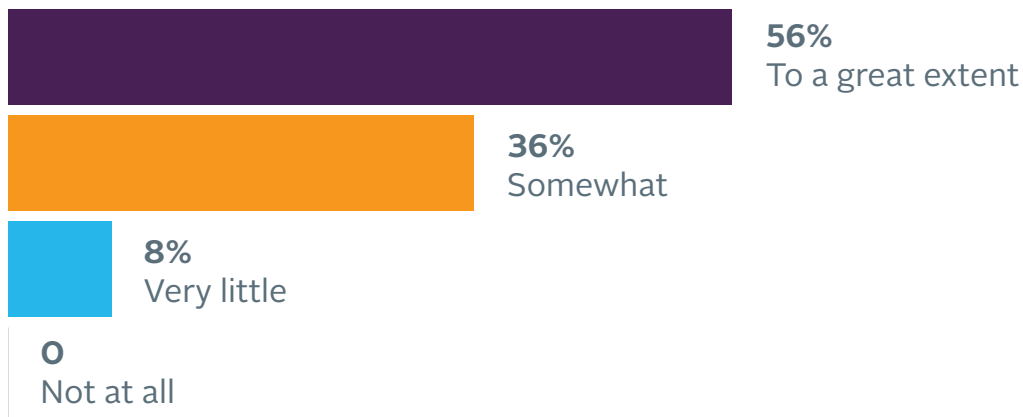
One of the main goals of BTE is to encourage students to see the importance of education beyond high school/secondary school. The previous section of this report revealed that most BTE alumni study participants have pursued or are currently pursuing higher education. Alumni who responded to the survey or interviews¹¹ confirmed that BTE influenced their education decisions and shared various ways BTE helped them achieve their education goals. On the survey, the large majority of respondents (92 percent) reported that BTE influenced their education decisions “somewhat” or “to a great extent.” The following chart displays the percentage of survey respondents who provided each response.

Part of the survey analysis included examining differences across gender, US/non-US sites,¹² and graduates 2012 and earlier vs. 2013-2016. The only notable difference for this survey question was that 100 percent of graduates in 2012 and earlier reported that BTE influenced their education decisions compared to 89 percent of those who graduated in 2013 to 2016.

¹¹ References to alumni in this report refer to those who responded to the study survey or took part in interviews.

¹² Of the total 54 survey respondents, 50 answered this survey question.

BTE Influence on education decisions (n=50 survey respondents)



Part of the survey analysis included examining differences across gender, U.S./non-U.S. sites,¹³ and graduates in 2012 and earlier versus 2013–2016. The only notable difference for this survey question was that 100 percent of graduates in 2012 and earlier reported that BTE influenced their education decisions compared to 89 percent of those who graduated 2013–2016.

During the interviews,¹⁴ the alumni discussed ways in which BTE influenced their education decisions after high school/secondary school. BTE's effects ranged from practical guidance on the steps necessary to apply to college to boosting confidence and providing motivation for getting there. The next section describes the major themes that emerged from the 23 interviews regarding BTE's influence on alumni's education decisions.

1. Influenced major/area of study

Half of the alumni interviewed who planned to go on to higher education¹⁵ (50 percent) reported that the BTE program helped them decide what to study. Exposure to a variety of different potential career paths made them more aware of their options, which then enabled them to make better choices about what to study. This was especially important for those who had not known what they wanted to do prior to the program.

Experts recommend that students explore college and career opportunities early on to better understand the necessary content knowledge and skills for a particular major or career (Connelly & McGaughy, 2012; Warren, et al., 2017). In this study, more than one-third of alumni interviewed (35 percent) remarked about how the exposure to the various careers within health/science organizations opened their eyes to new opportunities.

¹³ The majority of survey respondents (67 percent) were non-U.S. based.

¹⁴ Unless otherwise noted, the total number of alumni interviewed and responding to each question was 23.

¹⁵ Of the 23 alumni interviewed, 20 pursued higher education; 1 alumnus did not. The remaining two alumni planned to pursue higher education but had not yet enrolled at the time of the study.

BTE really helped me solidify my choice of what I wanted to major in. Of course, I wanted to apply to college, and go to college, but I wasn't too sure what I wanted to do...[BTE] helped me realize that business is really what I want to do.

A BTE alumna on how educational goals change as a result of BTE

One alumna described how learning about a BTE volunteer's position in marketing at Johnson & Johnson enabled her to see the breadth of options within a health/science organization. Another alumna similarly commented that he thought most employees within a science organization conducted research in a lab. He said BTE "opened the door to how many careers there were" and that he would not have realized the different options without BTE.

One of the lessons highlighted in *Celebrating the BTE Story* (FHI 360, 2017) was "Connect Academic Learning with the Real World." The report discussed how applied learning activities and hands-on experiences can increase the relevance of academics for students. Several alumni interviewed who pursued or planned to pursue higher education (32 percent) talked about how the real-world experiences offered to them through BTE cemented their decisions on what to study. One alumna described the internship opportunity as "prestigious" because it gave her insights on how to make the most out of college—an advantage many of her peers did not have. She commented, "It definitely opened up my perspective in figuring out what I needed to get out of college...I knew I needed to work more on public speaking, more on working with others, and [more on developing] hands-on experiences. [This] drove what I would study and prioritize during college." Having professional experiences instilled confidence in alumni who could make better decisions as a result of knowing their strengths and weaknesses.

In addition, the connections made through BTE were integral in alumni's education decisions; half of the alumni who pursued or planned to pursue higher education (50 percent) were influenced by conversations or relationships with professionals. One alumna commented that interactions with Johnson & Johnson employees ultimately led her to attend medical school. Another wound up choosing a different college based on conversations/recommendations from people she met during her internship. Another alumna discussed how she drew on these connections years afterward. When she considered changing her major in college, she reached out to the employees and her fellow interns who gave her "really good advice" and helped her with the transition.

2. Strengthened academic and foundational skills

On the survey, 44 percent of respondents selected academic support as a beneficial component of BTE. Support in specific academic courses such as chemistry, biology,

and math helped prepare alumni for higher education as well as university entrance exams. In addition to academics, foundational skills such as team building, time management, organization, study skills, and interpersonal skills were considered essential to meeting educational goals by 43 percent of alumni interviewed (10 of the 23 interviewed). This finding mirrors the literature citing the importance of foundational skills/soft skills/life skills. One alumnus expressed gratitude to BTE for improving his interpersonal communication skills. Overcoming his fear of talking to authority figures was a significant triumph that enabled him to converse with university professors.

3. Outlined the steps to prepare for college

Several alumni interviewed (30 percent) described how BTE volunteers walked them through the necessary steps to meet their educational goals. One alumnus described this as the “play by play of how to get where I wanted to get,” including specifically what grades were required, how to format essays, and suggestions for extra-curricular activities or internships to pursue. A first-generation college student said a BTE volunteer was “like an angel” to her; while her own family did not know how to provide guidance on applying for college or financial aid, the volunteer was “always someone I could go to with questions.” Another alumnus spoke about how meaningful it was that BTE volunteers took the time to explain these steps on an individual basis with students, to check in on their grades, and to provide them with encouragement along the way. After being encouraged to run for school office, he became vice president of his senior class and appreciated being “held to a higher caliber.”

4. Provided motivation

The BTE program motivated a number of alumni (30 percent) to work harder in school and strive to reach their goals. One alumnus described the program as an environment where he was “surrounded by very smart people who complimented ideas and thoughts but also challenged them—which is what leads to learning and improvement.” Another alumnus said that the courses offered through BTE made him realize he wanted “something more” and decided to pursue a “higher level of study.” Similarly, another alumna stated that she would not have traveled or decided to study nursing had it not been for BTE. She said she would have chosen a less challenging major. Now, because of BTE and the people she met through the program, she wants to continue studying, work in a hospital, and help people. One recent BTE graduate said the community service his BTE group conducted has inspired him to pursue social work and help less fortunate people. Another said the program underlined the importance of obtaining a good education. BTE “planted a seed” for this alumnus when he was in his sophomore year of high school, and he pushed himself to take honors courses in order to follow his dream of becoming an engineer. He said, “BTE was one of the big things that motivated me.” Another alumna emphasized the strong impression a week-long stay at a university made on her.

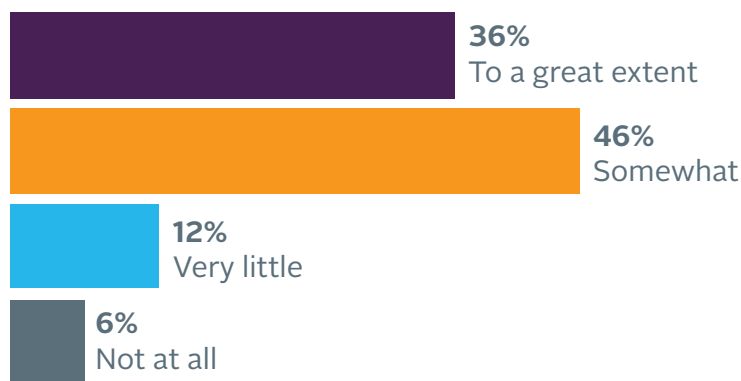
It opened my eyes to a bigger world outside of what I knew, just the small town and without having my parents, or any parent, or any cousins, or anyone, any relatives going to college. Yeah, it opened my eyes a lot to what I could do, and [where] I could go”.

A BTE alumna on how the program changed her viewpoint

BTE Influence on Career Decisions

Another important way that BTE influenced alumni was in their career decisions. BTE broadened alumni's perspectives on different career paths to pursue, gave them access to people with whom they could talk about careers, set up job shadowing and internships, strengthened their professional skills, and opened doors through networking. Overall, 82 percent of survey respondents reported BTE influenced their career decisions “somewhat” or “to a great extent.” The chart below outlines the survey result.¹⁶

BTE influence on career decisions (n=50 survey responses)



A slightly higher percentage of males reported that BTE influenced their career decisions—89 percent responded “somewhat” or “to a great extent” compared to 77 percent of females. Non-US respondents also responded more positively—88 percent compared to 72 percent of US respondents. In addition, more recent BTE graduates (those who graduated between 2013 and 2016) reported a larger influence of BTE in their career decisions: 86 percent compared to 69 percent of those graduating in 2012 or earlier. This could be due to the program evolving over time or recent graduates having little or no career experience on which to base BTE’s influence.

Similarly, the overall percentage of survey respondents who reported that BTE influenced their careers (82 percent) was not as high as the 92 percent who reported

¹⁶ Of the total 54 survey respondents, 50 answered this survey question.

BTE influenced their education decisions. This may also be due to the higher number of recent high school/secondary school graduates. More than half of survey respondents (55 percent) are currently working in or are planning to work in the STEM²D fields (45 percent currently working in STEM²D and 10 percent planning to do so in the future).

The alumni interviews shed light on a variety of ways that BTE influenced career decisions and goals—from giving practical advice on career options and career searches to offering opportunities to talk to professionals and gain real-world experience.

Below is a description of the main themes from the interviews regarding BTE's influence on alumni's career decisions.

1. Provided access to professionals

Having the opportunity to talk to professionals about their work and observe them in their roles was a critical way in which more than half of BTE alumni (57 percent) became aware of potential career paths and clarified their own interests. Six alumni (26 percent) identified company tours as a benefit. One alumnus described how visiting a Johnson & Johnson laboratory gave him a better idea of the types of jobs available and what might be possible for him. Another said seeing the pharmacy work and surgical tools made him realize “where [he] wanted to be.” Two alumni (9 percent) specifically mentioned job-shadowing days where they followed Johnson & Johnson employees to see the roles they played and tasks they assumed. Because of one of these experiences, one alumnus explained that he learned “how an engineer's work can be applied” and he went on to choose engineering as a career.

It helped me make sure that's what I wanted. Knowing how I felt about nursing before college was a big help for me – I didn't go into college not knowing. It solidified what I wanted to do. I went from getting my feet wet to jumping in head first.

An alumna on BTE's effect on her career aspiration

When alumni were interested in careers outside of STEM²D, BTE volunteers often facilitated job-shadowing, guest speakers, or site visits to expose them to their area of interest. Celebrating the BTE Story (FHI 360, 2017) identified the lesson: “Tap Networks to Broaden Students' Horizons,” which emphasized how drawing on cross-sector partners can enrich opportunities for BTE participants.

For more than half of the alumni interviewed (57 percent), conversations with Johnson & Johnson employees or other professionals assisted them in making career decisions. One alumnus mentioned that a BTE volunteer suggested she interview

people in various positions to learn about their daily tasks. Those interviews enabled her to see how much she loved data analysis. She said, “I was very fortunate to have that experience to talk to all those people and learn a little bit more about myself.” Another alumna said that during her internship, she would stay in people’s offices to “pick their brains” about their jobs and ask how they chose their careers. BTE volunteers were also cited as great resources for alumni to ask questions and improve their understanding of STEM²D careers.

2. Developed foundational skills

As mentioned earlier, BTE participation helped alumni gain foundational skills that supported them in their educational pursuits. More than half of alumni interviewed (57 percent) also reported obtaining various tools and skills that helped them become career ready. Alumni obtained these skills through classes/workshops, work experiences, group exercises, and one-on-one sessions with BTE volunteers.

One skill noted by some of the alumni interviewed (30 percent) was interpersonal communication. These interviewees referred to learning how to speak to professionals, older peers, and authority figures. One alumna talked about how BTE team-building work taught him communication skills, pointing out that this was “the type of knowledge I could not gain from ordinary school.” Six alumni (26 percent) reflected on how the time management skills they gained through BTE helped them in the working world. Another alumna identified “work ethic” as an asset he obtained through BTE, noting he better understood how to work “from the initiation of an idea, or a project, to actually completing it, [and] seeing it through.” Another alumna referred to the foundational skills he gained through BTE as “just rounding me out as a person.” Four alumni discussed the personal growth they experienced through BTE activities and mentoring, which led to increased confidence, higher self-esteem, self-regulation, and becoming more aware of their own strengths. These skills reflect the foundational skills/soft skills/life skills experts identify as critical for college and career readiness.

3. Outlined different career paths within and outside the health industry and STEM²D sector

Several alumni (35 percent) emphasized that the BTE program helped expose them to a broad range of potential careers both within and outside STEM²D. One alumna discussed the common assumption that biology majors will either go on to medical school or research. Her experience in a BTE internship helped her see and explore other pathways.

In *Celebrating the BTE Story* (FHI 360, 2017), one recommended practice is to “Expose Students to a Range of Possible Careers.” The report suggests that students not only benefit from learning about the array of available careers but from hearing about the pathways leading to those careers.

My BTE internship at a biotech company really helped me think outside of the box, and adopt a broader approach to my career goals. When I was graduating from college, I was thinking about consulting and finance type roles that would include biology, but with an interdisciplinary approach. The internship helped me realize that this was an opportunity—something more “non-conventional” that my peers weren’t really recognizing.

An alumna on the benefits of BTE internships

Being part of BTE boosted one alumnus’s interest in STEM²D and innovation; once she took a physics course in high school, she realized that she wanted to become an engineer. Another alumnus was considering journalism or law, but he decided on social work after the BTE community service in which he participated.

Three alumni mentioned how helpful it was to learn through BTE that your career can change over time. This took pressure off of making college decisions and allowed them to think more freely about their interests. They learned that selecting a major in college does not lead to being “stuck” in one field and instead opens a range of opportunities. One alumnus put it this way:

An alumnus I learned the most from was talking to people about the jobs that they did prior to the job that they were in. Knowing that what you study in college or even the jobs that you do for the first ten years of your life, you can change it.

4. Provided real-world experience

More than one-third of interviewees (39 percent) emphasized the key role that real-world experience played in their growth, confidence and future pursuits. Internships¹⁷ offered alumni hands-on experiences in various roles such as data analysis, lab work, working with medical devices, and research. Alumni learned science, technology, engineering, and math through work tasks to supplement what they learned in academic classes. One alumnus said an internship gave her the chance to grow professionally, which helped her while she was in college. She commented, “I knew what I wanted and had experience in it.”

¹⁷ In one site (Silicon Valley, CA), BTE students participated in six-week summer internships with local industry and academic partners. They interacted with and learned from employees of different backgrounds and positions, completed specified projects, and made presentations on their projects. The interns worked 30-40 hours a week and were paid a stipend (\$1,260 in 2007). Eight of the alumni interviewed (35 percent) took part in this internship model.

Another benefit of internships was the opportunity to work in a corporate environment. One alumnus commented on how having office experience early on helped “tremendously” in understanding how to navigate the corporate world. Another pointed out that the opportunity to speak routinely with people 20 or 30 years older than he improved his confidence and gave him insights and perspectives on what Johnson & Johnson employees did professionally, what they cared about, and what hurdles they were facing. This combination of work experience and access to professionals helped a number of alumni with career decisions.

My internship at Johnson & Johnson with the BTE program really jump-started my career, it gave me that background and that knowledge, and also helped me figure out what I really wanted to do...

A BTE alumnus on how the program influenced his career aspirations

Another interviewee said that BTE taught him “the importance of science and technology in the world” and shared his belief that real-world experience is a key complement to academic learning.

5. Prepared them to job search

A number of alumni interviewed (26 percent) commented on how BTE provided them with practical information and resources to ensure a successful job search. Alumni took part in workshops or worked one-on-one with BTE volunteers to prepare resumes. One alumnus mentioned learning how to set up a LinkedIn profile. Five (22 percent) described gaining tips for successful interviews—including how to dress and how to best present themselves. An alumnus asserted that BTE helped him “brand” himself in order to enter into his career field. Another explained how critical it was for BTE to teach these “fundamental” pieces, because so many high school/secondary school students are not familiar with the key steps.

6. Provided advice and connections

Career-wise, BTE volunteers were a significant support identified by more than half of BTE alumni interviewed (61 percent). They helped introduce alumni to different types of jobs and career paths and offered connections to obtaining internships and jobs. One alumnus stated, “We could always call and reach out, speak to one of the BTE volunteers who knows someone who knew someone.” The encouragement and guidance BTE volunteers provided was noteworthy to alumni as well. One person described the key role a volunteer played in helping him choose a career in which he felt comfortable. Another alumnus talked about a low period in his life post-college when he was unemployed. He reached out to a volunteer who had served as a coach/mentor to him—and who ultimately created a position for him.

Celebrating the BTE Story (FHI 360, 2017) discusses the importance of role models to BTE students and explains how strong relationships between BTE participants and volunteers can create opportunities for help and advice. Similarly, America's Promise Alliance (2017) identifies “caring adults” as one of the five promises that change the lives of young people, emphasizing that adults in schools, neighborhoods, activities, and communities serve as guides and advisors.

I was able to finally get my lucky break to go back into medical devices and learn from [my coach/mentor], [to] actually become the quality engineer that I am today, and again I couldn't have done it if I did not have the Bridge to Employment program.

An alumnus on BTE's lasting impact on his career

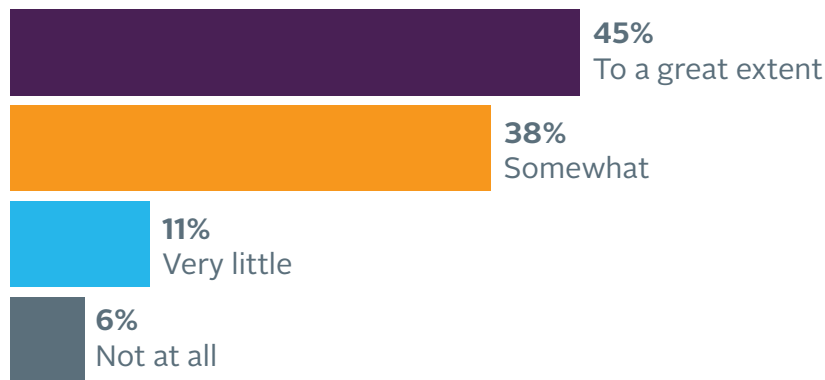
About one-third of the alumni interviewed (30 percent) indicated that BTE volunteers also helped them get a foot in the door at internships or jobs after college. These were key positions for the alumni because they were not only paying jobs—but jobs that would offer them relevant experience to put on their resumes. One alumna pointed out that talking about the importance of college is meaningless to a student who does not have the resources to pay for it. She emphasized the importance of BTE helping people obtain professional jobs, commenting, “Working at McDonald's doesn't necessarily coincide with your goals but working at a place like Johnson & Johnson or some other corporation, you can meet people who can help you with your resume and teach you important concepts that'll carry with you through to college.” Another alumna remarked that she felt lucky when she got her “dream job” six months after graduation because a BTE volunteer connected her to people she knew at a hospital. She emphasized, “Contacts are everything.”

BTE influence on community service

BTE is an example of Johnson & Johnson living their “credo in action.” The credo refers to “giving back to the communities in which they work and live.” Community service was a large part of the BTE experience, and alumni described a number of ways in which they volunteered then and now. In the interviews, alumni recognized that Johnson & Johnson employees volunteered their time in BTE and expressed gratitude for what they had been given. Several described a sense of wanting to “give back,” and some discussed their efforts to reach out specifically to youth in order to help them in the way that they were helped through BTE.

Almost 80 percent of survey respondents reported participating in community service in the past three years. Overall, 83 percent of survey respondents reported that BTE influenced their community service decisions “somewhat” or “to a great extent.” The following chart displays the survey results for this question¹⁸.

BTE influence on community service decisions (n=50 survey responses)



Males responded slightly more positively about BTE’s influence on their community service—94 percent responded “somewhat” or “to a great extent” compared to 81 percent of females. The non-U.S. respondents also responded slightly more positively—90 percent versus 72 percent responded “somewhat” or “to a great extent.”

In the interviews, the majority of alumni (91 percent) said that BTE impressed upon them the importance of community service. Although many alumni currently have busy school or work schedules, they described numerous ways in which they volunteer—through church groups or community service organizations, participating in fundraising walks or community clean-up events, working in soup kitchens or at clothing drives, and educating/talking with young people about their futures.

The project made me realize that there was more than studying...I could help the community not only by being an excellent doctor or scientist but also by doing small things, small things that matter. I'm planning this summer to volunteer in a hospital.

An alumna on how BTE helped her discover a passion for volunteerism

The main themes that emerged from the interviews regarding the ways BTE influenced alumni’s sense of community service were wanting to help youth and to “give back.” The following section describes those themes.

18 50 of the total 54 survey respondents answered this survey question.

1. Encouraged alumni to help youth

Helping youth was a common theme among alumni interviewed. More than a third of those interviewed (39 percent) expressed a desire to “give back” some of the great help they received through BTE. One alumnus mentioned that because of the skills he learned through BTE, he wants to offer guidance to young people who may need help with their next steps. He encourages the community school students he knows to call him with questions. Another explained how he teaches Excel and other subjects to help students at a local university. Similarly, another said, “I was planning to go to my former primary school to teach the kids to not give up on their dreams—because of what BTE has taught me.”

One alumnus talked about being a role model to high school students; he explained that some of the freshmen were curious about how he got to where he is and want to follow his path. Similarly, another said that sharing his story provided inspiration to students who saw “this guy who had no idea what he wanted to do and now he seems to have some things figured out.” A few alumni also discussed talking with and encouraging students in the same way that BTE was there for them.

I definitely emphasized what they should try to get out of college, how to determine what they want to do for their future, what’s going to be important, and what they shouldn’t worry too much about... I remember how important this experience was to me, and so I try to make it as special as I can for them.

A BTE alumnus on his efforts to pay it forward to current BTE students

Two alumni created more structured interactions with youth by forming student groups. Because of the impression BTE made on him, one alumnus founded a high school student group dedicated to putting students in more internship programs. Another alumnus established student groups, including a girls group about health, at her university.

Another two alumni shared that they would like to give back by serving as mentors to students. One alumnus said that he was impressed by a BTE volunteer who served as a mentor to him—that this person donated his time to BTE despite being very busy. The alumnus explained that he now makes time to tutor and coach track at his local high school even though he studies several hours each day in graduate school. He said, “If I could be half as good a mentor to other people as he was, I think I would probably die happy.” Another alumnus commented that he’d be “completely up for” becoming a BTE mentor because “I’ve gotten so much from [BTE] I’d have to give some back.”

2. Inspired alumni to want to “give back”

In discussing the importance of community service, two alumni mentioned remembering the Johnson & Johnson Credo, which includes language stressing the company’s dedication to giving back—being “responsible to the communities in which we live and work and to the world community as well.” One alumna described how Johnson & Johnson emphasized the importance of knowing the core mission of what you are doing.

I recall asking one of the engineers what he did for his job. I was expecting a description of tasks, but instead he said my part in this company is that I’m helping to create a better life for patients living with diabetes. That really resonated with me, because it showed me that everybody who worked for the company really believed in the company’s core values, and what the company does.

An alumna on how BTE redefined work for her

In general, alumni expressed pride in their BTE community service efforts, and one said it was “putting your work back into the world.” One alumna feels so strongly about community service that she makes a point of asking during job interviews how the company/organization supports volunteering. Another expressed it this way: “BTE has given me an opportunity, and I have to give back. And I do it by helping in any way I can.”

Other Common Themes

A few additional common themes emerged from the interviews across the three main topic areas. Because the themes do not fall into any one category but were frequently mentioned, they are discussed separately.

1. Importance of relationships

Relationships formed through the BTE program were repeatedly noted as being important to most (87 percent) of the alumni interviewed. Alumni established relationships with fellow BTE graduates, BTE site coordinators from the local community-based organization, and Johnson & Johnson employees/volunteers they met through the program. On the survey, respondents were asked if they kept in touch with the following groups. Results are as follows:

Groups with which BTE alumni stay in touch

	n=54
FELLOW BTE GRADUATES	36 (68%)
BTE SITE COORDINATORS	21 (39%)
J&J EMPLOYEES/ VOLUNTEERS	19 (35%)

Note: Respondents were asked to select all that apply

RELATIONSHIPS WITH PEERS

More than two-thirds of alumni surveyed reported staying in touch with fellow BTE graduates. During interviews, alumni discussed the close, “lifelong” friendships they formed. These relationships were strengthened by sharing the same experiences and the same outlook on the importance of education. They inspired each other, learned from each other, and studied together. Three alumni described their fellow participants as being like a support group because they could talk candidly with each other and ask each other for advice. One alumna referred to this support group as a “driving force” in her motivation to pursue her education and career goals. She and others mentioned keeping in touch via Facebook and noted that they are all proud of and inspired by each other’s accomplishments. Another alumna stated that BTE taught him the value of relationships.

Alumni who attended the annual BTE ABTS convening (35 percent) talked about staying in touch with BTE participants from other sites. All students who attend ABTS are coupled with other students from around the world to complete a project or task and are expected to present to the audience. One alumna described the ABTS group as a “family.” A few alumni noted their appreciation of the diversity of the ABTS group as well as the groups within their own sites.

RELATIONSHIPS WITH BTE VOLUNTEERS

As mentioned earlier, alumni frequently formed strong bonds with BTE volunteers; 86 percent mentioned BTE volunteers/mentors at some point during their interviews. In addition to providing guidance about education and career goals, the volunteers served as mentors, cared about them, and continued to reach out and stay in touch years after graduation. *Celebrating the BTE Story* (FHI 360, 2017) recognized that strong relationships between BTE volunteers/coaches and BTE participants last for years after the students graduate from the program.

2. Gaining confidence

Almost half of alumni (48 percent) remarked in the interviews that a significant benefit of the program was an increase in self-confidence, which subsequently helped

in their education, job positions, and life in general. The confidence gain came as a result of a number of things; for some, it was from the support of a BTE volunteer, for others it came from teambuilding exercises and BTE group friendships.

“I used to be very introverted, I was shy, and ever since I was in a group like the one I had, I have become more outgoing, I started to love myself more, I started to believe in myself, in my possibilities, and if I want to do something, I will be able to do it.”

A BTE alumna on the confidence she built in the program

Alumni commented on how the real-world experience they gained through BTE made them feel confident about their own competence. One alumna said that working in a professional environment enabled her to find out what her skills were and what she needed to improve. In addition, being in an office setting and talking to professionals built confidence towards networking. One alumna said that the BTE program helped her “grow out of her shell” and that her parents remarked about seeing a significant change in her personality due to the program.

In talking about gaining confidence, 35 percent of alumni interviewed noted that BTE helped them overcome shyness. Some alumni (43 percent) identified public speaking as a BTE component that helped build their confidence. BTE opportunities for public speaking were offered through workshops, camps or clubs that entailed BTE participants making frequent presentations to each other, internships that ended with project presentations to Johnson & Johnson employees, and the ABTS project presentations to all attendees. Alumni spoke about how the experience of presenting in front of (and being taken seriously by) Johnson & Johnson employees helped them in college and in the workplace. One alumna who said that he “wasn’t the most confident person” prior to BTE participation went on to be the master of ceremonies at his graduation.

“Before I joined Bridge to Employment I used to think that I could not stand in front of people, but they helped me to build confidence to stand in front of the school and tell them [our story].”

An alumna on the skills and confidence he developed in BTE

3. Exposure to other cultures/travel

More than one-third of alumni interviewed (39 percent) talked about how the program, and especially the opportunity to attend ABTS,¹⁹ convinced them of the importance of travel and seeing the world outside their community. Hearing guest speakers talk about their experiences in other parts of the world gave one alumna a “sense that everything is possible” and compelled her to spend two semesters abroad. Another alumnus explained that while his country is not known for research and development, his visit to the Johnson & Johnson lab in Ireland during ABTS gave him a “better view of his opportunities” and a new outlook on a potential area of study. ABTS is often the first time BTE participants take an airplane trip or leave their country. Two alumni discussed the opportunity they had to meet people from different backgrounds and cultures.

“I think that one of the most important experiences of the BTE program for me was ABTS...meeting and coming to know various people from all over the world—know them, know their culture, how they live or [how] they speak, how they think—was really important for me. They changed my view towards the world, because I realized how small I am, but also how much one person can make a difference.”

An alumnus on the importance of ABTS and global connections

Another alumnus became interested in public policy/political science after learning about different people and cultures at ABTS. He said, “[ABTS] sparked everything. That one week changed my life.”

Most influential BTE program components

As mentioned previously, the BTE program includes a variety of activities and experiences for participants to provide them with the skills needed to succeed in education and careers after high school/secondary school. In order to find out which activities had the most impact on participants, the survey asked alumni to review a list of common activities and select which had “the most influence on [their] education/career goals.” The following table displays the responses to this question. Respondents were asked to check all that apply.

¹⁹ Johnson & Johnson’s annual Alliance Building & Training Session (ABTS) is a unique professional development and networking event for Johnson & Johnson employees, community leaders, and educators implementing the BTE program around the globe. Each year, a select number of students (student ambassadors) are chosen to represent their BTE sites at the ABTS. Eight (35 percent) of alumni interviewed attended ABTS.

Components of BTE survey respondents reported had the most influence on their education/career goals(n=54)

BTE COMPONENT	SURVEY RESPONDENTS
<p>Career Coaching/Mentoring: The process of helping students identify, acquire, and achieve specific knowledge about various careers and career paths.</p> <p>Johnson & Johnson volunteers commit to frequent and ongoing interactions with specific students or teams of students. Career coaches, who may also be referred to as navigators or ambassadors, serve as positive role models.</p> <p>Long-term career coaching (over several months or years) can result in deep connections between volunteers and students; students often refer to this type of relationship as “mentoring.”</p>	33 (61%)
<p>Skill Building Workshop or Training: Training sessions aimed at building and improving foundational skills, such as communication, problem solving, critical thinking, collaboration, and teamwork.</p>	26 (48%)
<p>Academic Support/Tutoring: Supplemental or remedial instruction in specific academic content areas, such as mathematics, science, or English, to improve students’ academic achievements (grades).</p>	24 (44%)
<p>Guest Lecture: A session featuring an individual speaker who shares his/her professional story (i.e., the speaker’s educational and career path).</p>	23 (43%)
<p>Tour/Field Trip: Visits to a Johnson & Johnson local operating company.</p> <p>Through observations and hands-on activities, students gain a better understanding of the “world of work” and learn about a range of professions within the health care industry</p>	19 (35%)
<p><i>Note: Total does not equal 100% because respondents were asked to check all that apply.</i></p>	

BTE COMPONENT	SURVEY RESPONDENTS
<p>Community Service/Service Learning: Voluntary work to help or benefit people and strengthen the community.</p> <p>When community service is integrated with student learning, the experience is enriched; this is called service learning.</p>	18 (33%)
<p>Camp/Multi-day Event: An instructional program, often during non-school time (e.g., summer or winter break) aimed at improving academic achievement, career awareness, foundational skills, and/or higher education readiness.</p>	17 (32%)
<p>Higher Education Entrance/Application Support: Activities, such as “open days,” “college tours,” or “student-for-a-day” programs that help students learn about various institutions of higher education as well as their entrance requirements.</p> <p>Activities may also focus on helping students apply for and be accepted to an institution of higher education.</p>	14 (26%)
<p>Hands-on Science Lab: Hands-on, minds-on, inquiry-based science experiences that have real-life applications</p>	13 (24%)
<p>Internships: Formally structured opportunities to work at Johnson & Johnson local operating companies under the supervision of employees.</p> <p>These positions, which can be paid or unpaid, help students to gain work experience</p>	12 (22%)
<p><i>Note: Total does not equal 100% because respondents were asked to check all that apply.</i></p>	

As shown in the table, the components most frequently selected as being most influential were career coaching/mentoring, skill building workshops/trainings, academic support, and guest lectures. Fewer respondents selected hands-on science labs and internships. Because sites vary in focus, not all components were offered at all sites.

During the structured interviews, alumni responded to a similar question. Alumni were asked to think back to their experience in BTE and talk about the activities or events that stood out to them as being most beneficial. Respondents were not provided a list and simply responded based on their memory of the program. The most common responses were career coaches/mentors (48 percent), gaining life skills (30 percent), academic classes or courses (26 percent), and real-world experiences (22 percent). The following section expands on these interview responses.

1. Career Coaching/Mentoring

One alumnus said, “I think that coaching and mentorship [are] the key thing[s] that really helps anyone excel anywhere.”

BTE sites utilize positive role models to increase youth learning and build effective relationships. Although the name used to describe the youth-volunteer interaction varies by site (e.g., ambassadors, BTE mentors, career coaches, navigators), the activity centers on helping BTE students identify, acquire, and achieve specific knowledge, technical skills, and the qualities or skills necessary to succeed in the 21st Century Workplace. The significance of these coaches/mentors to alumni was expressed in various ways—assistance with the steps in preparing for college, guidance on selecting majors or career paths, practical advice on life skills, and just “being there” for the students both during the program and for years afterward. Alumni also noted that BTE volunteers facilitated the arrangements of pivotal events such as interviews for scholarships and job-shadowing opportunities.

BTE volunteers also served as role models—as successful professionals and as caring people with commitments to community service. One alumna specified the importance of “having exposure to a workplace with a strong representation of women in leadership roles.” Two alumni were inspired by BTE volunteers to contribute in the way that they did to help high school/secondary school students. One alumnus remarked that after recognizing the importance of coaches/mentors in life, he has made it a habit to find a mentor in each organization where he has worked. *The Celebrating the BTE Story* (FHI 360, 2017) report encourages local partners to consider involving volunteers with diverse roles and to facilitate the role-model relationship between those volunteers and BTE participants.

[My mentor] was someone to talk to...talk about my dreams, my hopes, my ambitions, things I wanted to accomplish...They really do continue to mentor you and care about what happens to you after you are done with the program, and I think that that's something that's priceless. That really is useful for the rest of your career.

An alumnus on the lasting value of BTE mentorship

2. Gaining life skills

Alumni noted a number of important life skills they gained through BTE—the most common being leadership, communication/interpersonal skills, team work, and public speaking (with each cited by five alumni or 22 percent). These skills were gained through workshops and lectures or through advice from BTE volunteers. Four alumni (17 percent) discussed how BTE improved their self-esteem—as a result of

experiences such as completion of a presentation or the encouragement of a caring adult. Four alumni (17 percent) said BTE helped them acquire time management skills that helped them in both in high school/secondary school and higher education. Other life skills mentioned were perseverance, discipline, and study skills. Four alumni (17 percent) said BTE helped them acquire time management skills that helped them in both in high school/secondary school and higher education. Other life skills mentioned were perseverance, discipline, and study skills.

3. Academic courses/classes

Alumni mentioned the out-of-school courses or classes provided by BTE as one of its beneficial components. Advanced classes were offered during winter or summer breaks or after school in chemistry, biology, or physics. In addition, some sites offered tutoring to assist students who needed additional academic assistance. Other classes supported preparation for university admission exams. One alumnus specifically mentioned that he would not have gotten into college had it not been for the SAT class provided through BTE. As he noted, “At the end of the day, all the other stuff is important but teaching me how to dress for success, how to interview, how to do all these things really becomes useless if I don’t get into college.”

Another alumna talked about how meaningful her nursing courses were that she took on weekends as part of her BTE program. She explained, “We had courses related to our profession, and the truth is they were a lot of help, because the people teaching the class were working professionals, not just teachers; they were nurses.”

4. Real world experience

As mentioned earlier, alumni emphasized the key role that real-world experiences played in their growth, confidence, and college and career paths. Internships offered hands-on experience in various roles such as data analysis, lab work, working with medical devices, and research. Alumni learned science, technology, engineering, and math through work tasks to supplement what they learned in academic classes.

Study Limitations and Strengths

There were a few of limitations to this study:

- A limited number of alumni participated in the study. While the FHI 360 database contained contact information for more than 500 BTE alumni, that number represented only a small percentage (approximately 10 percent) of the total population that participated in BTE. Alumni from earlier years did not have email addresses at the time of their participation in BTE.
- Often, FHI 360 received updated contact information for alumni through the former BTE site coordinators. Therefore, the pool of study participants may have been skewed to those who had positive BTE experiences and/or those who maintained relationships with their BTE contacts.

- The survey response rate of 10 percent represents a very small percentage of the total population of alumni in the database.
- More than a third of survey respondents completed the BTE program in 2016, which skews responses toward more recent BTE programs and alumni with less experience post-BTE. This limitation was partially offset by the interview data, which represented alumni more broadly across the past 13 years.

The strengths of this study include:

- The survey and interview data provided perspectives from some alumni several years after graduation. Such data are typically difficult to obtain because of the challenges associated with contacting participants after high school/secondary school (e.g., changes in addresses, names, and contact information).
- This retrospective analysis enabled BTE alumni to report on their experiences after high school/secondary school and reflect on the impact of BTE on their lives since their participation.
- Input from alumni in this study illuminates the impact of various program components on college and career plans and outcomes and how volunteers can influence college and career readiness.



CONCLUSIONS AND RECOMMENDATIONS

The findings from the study survey and interviews point to some overall recommendations for both BTE and other college and career readiness programs.

Outline career pathways through exposure to a variety of careers

Exposing participants to a variety of different potential career paths will enable them to make more informed choices, not only about careers but also about the higher education pathways to get to those careers. The FHI 360 *College and Career Readiness: A Guide for Navigators* (Warren, et al., 2017) recommends discussing education and career goals together so that students can see how secondary education is relevant to various careers. Students may become aware of new career options or majors they did not know existed. Guest lectures, company tours, real-world experiences, and volunteer/career coach conversations all contribute to broad exposure for students.

Strengthen the foundational skills that are key to education and careers

Alumni described how foundational skills such as teambuilding, time management, organization, interpersonal skills, and communications skills helped them in their education and career paths. Workshops can help students learn and practice skills such as time management or communications skills, whereas one-on-one conversations and relationships with volunteers/career coaches/mentors will help foster interpersonal skills. Work experience, through internships or projects, will enable participants to gain confidence and better awareness of their own priorities and competencies.

Clarify the practical steps to prepare for college and careers

Practical guidance on the steps to getting into higher education, selecting careers, and applying for jobs helps to support participants in meeting their goals. Alumni confirmed the importance of knowing what classes to take and what grades are required for acceptance into specific colleges/universities. One-on-one meetings between students and volunteers/career coaches can ensure students are on track to meet their goals. Offering participants opportunities to meet and talk to professionals gives them direct input on possible careers and empowers them to make choices about their future paths. Work experience takes this one step further by enabling participants to try out tasks, take on responsibilities, test their skills, obtain new skills, and base decisions on hands-on experiences. Internships, job shadowing, guest lectures, and company tours are key strategies for offering real-world exposure. Programs should include opportunities to access a range of career fields both within

and outside STEM²D. In addition, workshops or classes can guide students through the often-confusing process of completing financial aid applications. Similarly, equipping participants with tips on how to search for a job—including resume development and preparation for interviews—will give them tools and confidence for entering the working world. the often-confusing process of completing financial aid applications. Similarly, equipping participants with tips on how to search for a job—including resume development and preparation for interviews-will give them tools and confidence for entering the working world.

Provide support and encouragement

Alumni reinforced how important relationships to volunteers/career coaches were to them, while in the program and long afterward. BTE alumni derived benefits from the college and career advice they received, and they also recognized the importance of having a caring adult provide encouraging words and check in with them on a regular basis. Programs should consider this when selecting volunteers and support the development of relationships through providing time and opportunities for social interaction.



APPENDICES



APPENDIX A: METHODOLOGY

Study purpose/research questions

The study examined the following research questions:

1. What components of the BTE program do alumni describe as most beneficial?
2. How has the BTE program influenced their educational goals, career attainment, and community service?
3. Where are alumni now?

Additional factors examined were how the experiences of BTE alumni varied over time (specifically between pre-2013 participants who may have graduated from higher education and the more recent 2014–2017 participants) and whether and how their experiences varied across location/regions (i.e., U.S. sites versus non-U.S. sites).

This study employed a mixed method design, including an online survey and semi-structured phone interviews. All data collection protocols, consent forms, data collection procedures, and analysis methods were reviewed and approved by the FHI 360 Institutional Review Board/Protection of Human Subjects Committee. The study methods, sample sizes, and the purposes are outlined in the table below.

The target population included all former participants in the BTE program during the past 25 years. These range from recent high school graduates (2016) to those who graduated 20+ years ago. BTE's existing alumni network has served as the primary conduit for identifying alumni. FHI 360 has a contact list of more than 500 BTE alumni. The inclusion criteria for the survey were to have participated in a BTE program and that FHI 360 had an accurate email address. For the interviews, FHI 360 selected a stratified sample, as discussed in the Data Collection section on the next page.

Study research methods, sample sizes and purposes

METHOD	SAMPLE SIZE	PURPOSE
Online survey	522 BTE alumni Emailed survey to entire population	Gather broad information from large group on which components of the program were most beneficial; if participants attended or plan to attend higher education; if participants work or plan to work in a health/science career
Individual semi-structured interviews	23 participants -15 selected to represent the following groups: <ol style="list-style-type: none"> 1. BTE pre-2004 2. those profiled in 2012 for 20th anniversary 3. alumni who are (or were) Johnson & Johnson employees <p>Additional 8 alumni took part through volunteering their email address via the survey (all survey respondents were asked whether they would be willing to participate in a follow-up interview)</p>	Gather in-depth descriptions of BTE participants' experiences during BTE, and which components have been the most beneficial; how the program influenced their educational and career goals. Examination of how experiences may have differed over the years/ across sites.

The target population included all former participants in the BTE program during the past 25 years. These range from recent high school graduates (2016) to those who graduated 20+ years ago. BTE's existing alumni network has served as the primary conduit for identifying alumni. FHI 360 has a contact list of more than 500 BTE alumni. The inclusion criteria for the survey were to have participated in a BTE program and that FHI 360 had an accurate email address. For the interviews, FHI 360 selected a stratified sample, as discussed in the Data Collection section below.

Data Collection

This study used two data collection methods: an online survey and semi-structured phone interviews. The following section describes the process for both methods.

ONLINE SURVEY

An online survey was conducted via email with the entire population of BTE graduates for whom FHI 360 had current contact information (a total of 522). In addition, to further promote participation, three notices were posted on the BTE LinkedIn site (which has 62 members), three posts were made on Facebook, and two tweets were posted on Twitter. Contacts were made with former site coordinators asking them to pass along the survey request to alumni. Finally, reminders were sent via email to the entire list after two weeks and four weeks. A total of 54 BTE alumni responded (10 percent response rate).

The survey was brief, requiring approximately 5-10 minutes to complete. The questions gathered descriptive information about the alumni (e.g., graduation year, gender, location of BTE program in which they participated, highest level of education completed, whether or not they are currently working or planning to work in a STEM²D career, and whether they are or were Johnson & Johnson employees) and asked them to rate the extent to which the BTE program influenced their education decisions, career decisions, and levels of community service participation.

SEMI-STRUCTURED INTERVIEWS

In order to gather perspectives on BTE across the years and across the world, semi-structured phone interviews were conducted. The interview questions focused on the same topics as the survey questions but allowed for in-depth explanation and description. Participants were selected using a stratified sample to represent three groups: 1) students who participated in BTE prior to 2004; 2) students who were profiled five years ago for the 20th anniversary of BTE; and 3) former BTE students who are now or have been Johnson & Johnson employees. To recruit for these interviews, students were contacted directly from the FHI 360 email list, and former BTE site coordinators were asked for help in contacting alumni. The pre-2004 category was the most difficult to fill due to the changes over time in contact information. Two people from that time period were interviewed, but the other categories were filled. A full description of the sample is presented in Appendix B.

The interview protocol was semi-structured and allowed flexibility in question order and in tailoring questions to individuals based on their experiences and responses. The phone interviews took approximately 20–30 minutes to complete. FHI 360 staff completed 23 interviews with BTE alumni.

Data analysis

The data analysis for this study involved quantitative and qualitative methods. The survey data were analyzed by producing basic descriptive statistics using Excel and SPSS and examining results by:

- Graduation year
- Gender
- Geography
- Level of education completed
- STEM²D career or major

The interviews were recorded and transcribed. Data were subsequently organized and analyzed using NVivo software. A thematic content analysis was conducted—looking for common themes and experiences as well as notable distinctive comments. Themes and patterns were also examined by the stratified categories. The unit of analysis was a sentence or a paragraph—whichever was sufficient to capture a participant’s complete thought.

Responses were coded by reviewing each transcript related to the main themes: BTE’s influence on education decisions, career choices, and community service activities, and beneficial program components. At the same time, emerging sub-themes and new themes were coded. All of the codes were combined and reorganized as needed. Commonalities were grouped and recorded within each theme, and quotes were selected to highlight these themes. Individual comments were also selected to describe unique ideas.

APPENDIX B: STUDY POPULATION

Demographics of Respondents

The following tables display demographic data on the respondents to the online survey and interview participants.

SURVEY RESPONDENTS N=54								
Graduation Year		Gender		Site Location		Highest level of education		
2004-2012	2013-2016	Female	Male	US	Non-US	Graduated HS/SS	Attending or graduated univ	Attending or graduated with adv degree
13 (24%)	41 (76%)	34 (63%)	20 (37%)	18 (33%)	36 (67%)	13 (24%)	35 (65%)	5 (9%)

INTERVIEW PARTICIPANTS N=23								
Graduation Year		Gender		Site Location		Highest level of education		
2004-2012	2013-2016	Female	Male	US	Non-US	Graduated HS/SS	Attending or graduated univ	Attending or graduated with adv degree
12 (52%)	11 (48%)	11 (48%)	12 (52%)	13 (57%)	10 (43%)	1 (4%)	19 (83%)	3 (13%)

Respondents to the survey and interviews are shown by the country of their BTE program in the table below.

COUNTRY	SURVEY RESPONDENTS	INTERVIEW RESPONDENTS
United States	18 (33%)	13 (57%)
Kenya	13 (24%)	2 (9%)
Czech Republic	5 (9%)	0 (0%)
Scotland	4 (7%)	0 (0%)
South Africa	4 (7%)	2 (9%)
Italy	3 (5%)	1 (4%)
Romania	3 (5%)	1 (4%)
Spain	2 (4%)	1 (4%)
Panama	1 (2%)	1 (4%)
The Netherlands	1 (2%)	0 (0%)
Colombia	0 (0%)	1 (4%)
Ireland	0 (0%)	1 (4%)
Total	54 (100%)	23 (100%)

CITIES/TOWNS INCLUDED:

US: Ambler, PA, New Brunswick, NJ, North Plainfield, NJ, Trenton, NJ, Livingston, NY, Taunton, MA, Silicon Valley, CA, Wilmington, DE

Bucharest, Romania

Panama City, Panama

Inverness, Scotland

Grantown on Spey, Scotland

Cape Town, South Africa

Leiden, Netherlands

Madrid, Spain

Nairobi, Kenya

Naples, Italy

Prague, Czech Republic

Note: Number of participants per town/city not included to protect confidentiality

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