



**Bass Connections Annual Evaluation  
2019-2020**



## Executive summary

This report summarizes key findings from the 2019-2020 Bass Connections evaluation, which seeks to understand the experience of team leaders and undergraduate and graduate students in the program, including: overall satisfaction, factors for team success, and the impact of the program on faculty and student development. Each year, information from the annual survey informs program improvements. Findings from this year's evaluation, and links to key sections of this report, include:

### [Finding 1: Undergraduate students participate to gain research and teamwork experience across disciplines](#)

### [Finding 2: Team leaders and students are highly satisfied with their Bass Connections experience and would recommend the program to their peers](#)

- [A unique experience for undergraduates](#)
- [Drivers of satisfaction](#)

### [Finding 3: Faculty and students report a range of career, skill development and relationship building benefits from participating in Bass Connections](#)

- [Benefits for undergraduate students: Engagement](#)
- [Benefits for undergraduate students: Skill development](#)
- [Benefits for graduate students](#)
- [Benefits for team leaders](#)

### [Finding 4: Bass Connections teams engage in high levels of collaboration and teamwork, with some gaps](#)

- [Clarity of information at program onset](#)
- [Student preparedness](#)
- [Clarity of project goals, roles and timelines](#)
- [Teamwork](#)
- [Team leader engagement](#)
- [Student engagement](#)
- [Impact of COVID-19](#)

### [Finding 5: Team leaders feel supported by Bass Connections](#)

## Overview and methodology

Since Bass Connections began in 2013-2014, we have administered an annual end-of-year survey to team leaders, graduate students and undergraduate students to better understand factors for team success and the impact of the program on participants. Three different surveys are administered to each of these participant groups, including some common questions across all surveys and some questions specific to each population.

This year, recognizing the strains associated with pivoting to a remote learning environment, we abbreviated these surveys, focusing on a few core questions that we track each year. The survey included participants in 68 year-long project teams.

In 2019-2020, we also piloted a new evaluation approach for undergraduate students. Working with the Trinity Office of Assessment at Duke, undergraduate student participants completed a self-assessment of their skills and abilities in research, teamwork and communications before and after their Bass Connections experience. Results were benchmarked against a comparison group of nonparticipating Duke students. The Bass Connections students also completed several standard end-of-year survey questions that we ask each year to assess the quality of their experience in the program.

### Response rates

In total, 347 surveys were completed, a significant increase from last year’s response rates.<sup>1</sup> Response rates for each survey population were as follows:

- Undergraduate students: 163/519 (31%)
- Graduate students/postdocs: 103/190 (54%)
- Team leaders: 82/180 (46%)

Team leader respondents include both faculty and staff members leading a team. Graduate student/postdoc respondents (referred to hereafter as “graduate students”) include 50 master’s students, 43 doctoral students, 6 postdocs and 4 MD students. These numbers are roughly representative of graduate student participation in the program which, in 2019-2020, included 53% master’s students, 37% PhD students, 8% other advanced degrees and 2% postdocs.

All Bass Connections themes were well-represented in the responses. Undergraduate student response rates by class year also roughly approximate the general distribution of participants in the program.

	Percent of undergraduate <i>participants</i> by class year	Percent of undergraduate <i>respondents</i> by class year
First-years	1%	1%
Sophomores	41%	45%
Juniors	27%	26%
Seniors	31%	28%

### Finding 1: Undergraduate students participate to gain research and teamwork experience across disciplines

Undergraduate students comprise the vast majority of Bass Connections participants, with 519 students on a year-long project team in 2019-2020. Students apply to join a team through a competitive selection process. While selection rates vary widely by team, approximately 60% of applicants are accepted.

On the pre-survey, selected undergraduates were asked: “What do you hope to gain from your Bass Connections experience?” Commonly cited goals included: gaining experience with research, working on a team, working across disciplines and broadening knowledge. A sampling of responses include:

<sup>1</sup> 2018-2019 response rates: Undergraduates: 25% (n=104); Grad students: 36% (n=61); Team leaders: 38% (n=50)

*I hope to broaden my knowledge of research techniques and learn to better work and communicate with a group. I am also excited to see results from our research and view the impacts of our work throughout society. [Undergraduate student]*

*I hope to become more experienced and comfortable with the stages of the research process, specifically the recruitment side and brainstorming for practical solutions to our research questions in the Duke community. I also hope to make strong connections with the graduate students and professors on my team. [Undergraduate student]*

*I'm excited to learn from experts on the topic and grow in my knowledge of the medical aspect of reproductive healthcare. I'm also excited to have more exposure to group-based research in an intergenerational and interdisciplinary manner. [Undergraduate student]*

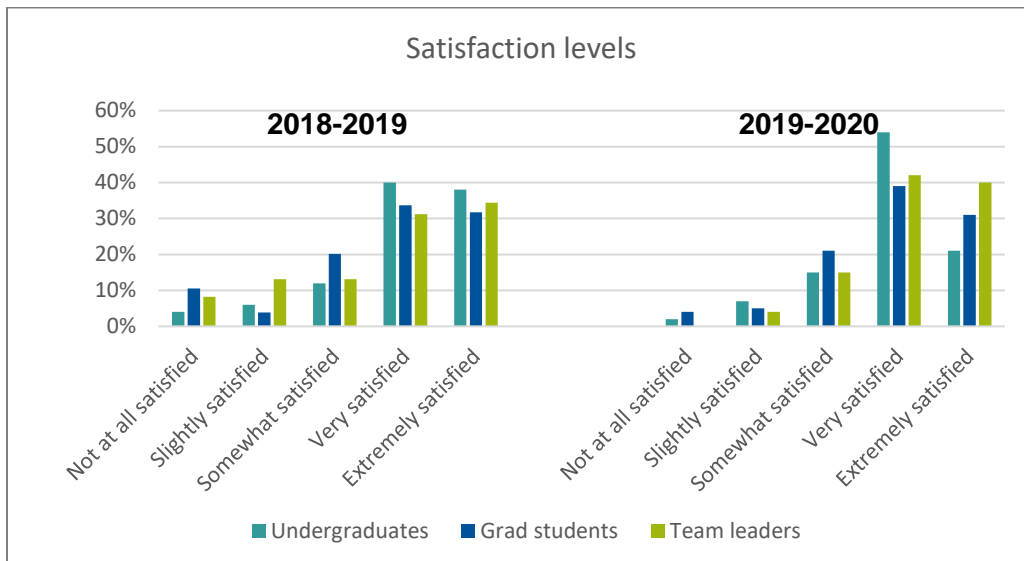
*I hope to become better at synthesizing the information I'm given (from background information and readings provided) and have a new outlook on the problem. I hope to think critically and gain skills of public speaking and be able to communicate the ideas that I have. I hope to better defuse conflicts that my team gets in and be sure to have my voice count for something. [Undergraduate student]*

**Considerations for the future**

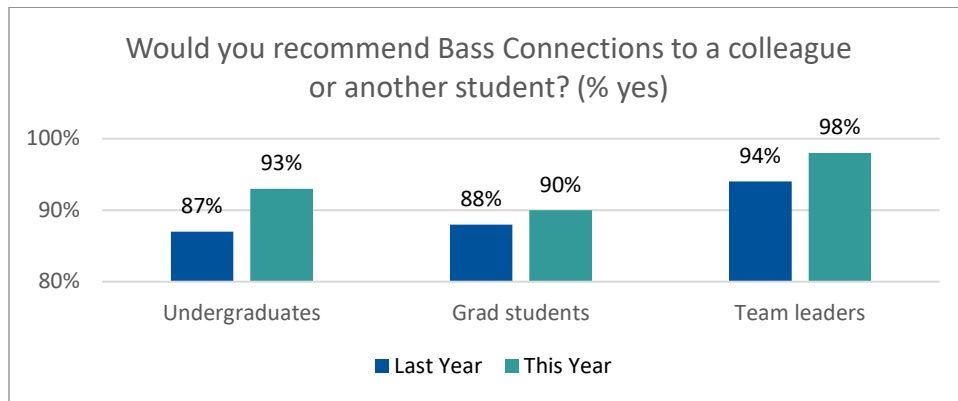
- Given high student interest in the program, how can Bass Connections infuse the program model further into the curriculum to provide more students with collaborative research experiences?

**Finding 2: Team leaders and students are highly satisfied with their Bass Connections experience and would recommend the program to their peers**

The vast majority of team leaders and students are either very or extremely satisfied with their experience on a Bass Connections team. Noticeably, satisfaction levels for team leaders and graduate students increased this year, while undergraduate student satisfaction remained roughly consistent with last year’s results, although fewer undergraduate students reported being “extremely satisfied.” The number of participants who reported being dissatisfied with their experience decreased for all populations this year.

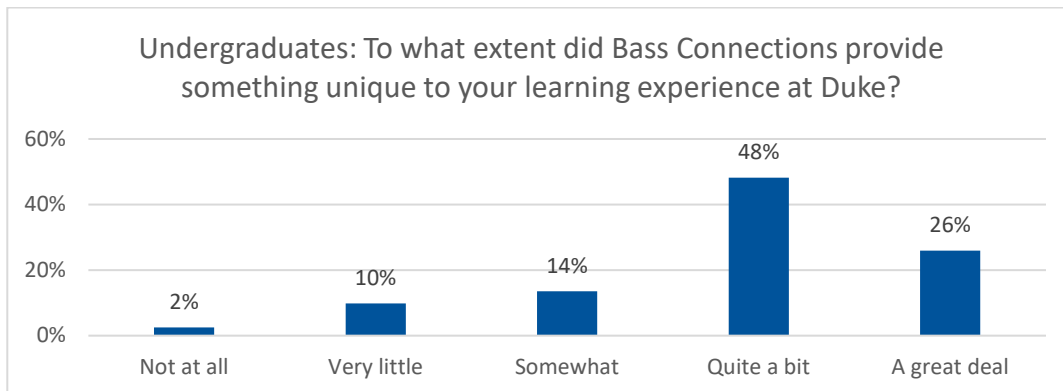


Likewise, the percent of participants who reported that they would recommend Bass Connections to a colleague or another student increased across all three survey populations over the prior year. As in past years, team leaders continue to be more likely than student participants to recommend the program.



### A unique experience for undergraduates

The majority of undergraduate respondents (74%) agreed that Bass Connections provided a unique learning experience, with 14% responding “somewhat” and 12% disagreeing with this statement.



Several comments indicate how Bass Connections provides unique opportunities:

*I enjoyed the opportunity to provide meaningful work towards a cause I care about outside of the classroom. It is more applicable and plays a role in helping issues in our surrounding communities. [Undergraduate student]*

*Bass Connections offered me an experience very different from my typical experiences in traditional classes. My interactions with my classmates and my professors were very different. I loved the combination of conducting both independent work and working together with my classmates. [Undergraduate student]*

*My Bass team's fall break trip to Kentucky was where I learned the most, as it was an experience that allowed me to observe things outside of the classroom and meet the people who we were talking about and researching. [Undergraduate student]*



## Drivers of satisfaction

To better understand the factors linked to satisfaction, last year, we tested the correlation of multiple variables with reported satisfaction rates using response data from 2017-2018 and 2018-2019 and found that the following factors had a statistically significant<sup>2</sup> relationship to participant satisfaction:

### Team composition factors

- Individuals on teams that have *existed longer* are more satisfied than those on new teams
- *Larger teams negatively* impacted the satisfaction of graduate students

### Team operation factors

- *Frequency of team meetings* (more frequent = positive)<sup>3</sup>
- Having *clear information* about the project at the beginning
- Perceived *commitment level* of other team members and team leaders
- Extent to which participants agreed that:
  - Their team had a *clear project timeline*
  - Their team engaged in an intentional *goal setting process*
  - *Students were prepared* to engage in the work
  - Their *team worked well together*
  - They had a *clearly define role on the team*
  - Their team *spent time fostering a positive team environment*
- Extent to which students agreed that the *team leader provided direction*
- Extent to which students reported positive/negative *team leadership*

As described in [section 4](#) of this report, evidence continues to suggest that these factors strongly influence the participant experience as well as the project results.

### Considerations for the future

- Given the diverse composition and goals of teams, how can Bass Connections provide support and resources to improve the team experience while still supporting the variable needs of teams?
- Given the diversity of expectations, research topics and leadership styles of team leaders, how can the program manage and meet student expectations?

## Finding 3: Faculty and students report a range of career, skill development and relationship building benefits from participating in Bass Connections

### Benefits for undergraduate students: Engagement

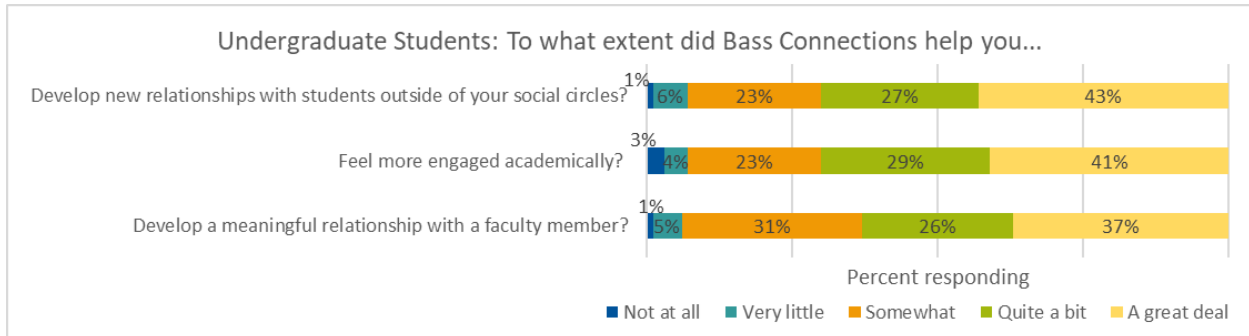
For some students, Bass Connections is an avenue to help them find, or grow, academic passions while also developing new relationships outside of their existing communities. To assess the potential impact of the program on undergraduate student engagement, respondents were asked three questions that map to findings from the [Student Resilience and Well-being Project](#) – this comprehensive, multi-institution research project found that student resilience and well-being improves when, amongst other things, students develop meaningful relationships with faculty and students, and feel academically engaged.

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<sup>2</sup> Statistically significant at  $p < 0.05$

<sup>3</sup> For undergraduate students and team leaders only; this result is not statistically significant for graduate students

Based on the goals and structure of Bass Connections, we would expect to see that the program helps students build new relationships with students and faculty and become more academically engaged. The survey results below confirm this hypothesis, while also indicating that there remains room for improvement.



Student comments provide further context for how the program contributes to students' academic engagement and relationships.

### On relationship building

*The most meaningful part of this program for me was engaging with students and faculty that I would not have otherwise worked with. Working in an interdisciplinary project exposed me to people and ideas that helped me grow as a researcher, student, and team member. [Undergraduate student]*

*The most meaningful aspect of Bass Connections was being able to interact and share ideas with people across different disciplines and tackle problems in a way that a single discipline probably could not resolve. [Undergraduate student]*

### On academic engagement

*My Bass Connections project offered me a really unique opportunity to experience the full engineering design process to make a device. This was an incredible opportunity for me to hone a lot of different skills. I am excited to continue working on what I have learned through this project. [Undergraduate student]*

*I really loved becoming involved in a topic that I am very passionate about and also being able to pursue things that are a little scary too like deciding to get our interview and survey tools IRB approved and then interviewing health workers in Peru. It was truly an amazing experience [Undergraduate student]*

### On relationships with faculty

*I got to develop relationships with faculty that I wouldn't otherwise be able to interact with. They were all so passionate about the subject and really fostered a strong team bond. I always look forward to team meetings and I truly feel that my Bass Connections project has made me feel more strongly about integrating education and mentorship into my future career. [Undergraduate student]*

The most meaningful experience from my Bass Connections engagement was the relationship that I formed with my faculty mentor, Dr. Jason Luck. Dr. Luck is passionate, available, dedicated, and persistent, and he encourages the Bass Fellows on his team to pursue unique interests/projects. I greatly respect Dr. Luck and deeply appreciate our relationship, which was made possible by Bass Connections. [Undergraduate student]

*I think the ability to work so closely with faculty members was valuable. I definitely built strong faculty relationships and got to know other students interested in the same topic. I liked how the faculty members worked with us collaboratively, and it felt like we were all team members working towards a common goal. [Undergraduate student]*

### **Benefits for undergraduate students: Skill development**

To assess the extent to which Bass Connections helps students develop their critical thinking, teamwork, research and communication capacities, in 2019-2020, we partnered with the Trinity Office of Assessment at Duke to administer a “pre-participation” and a “post-participation” survey to the 381 undergraduate students selected to participate on a Bass Connections team by spring 2019<sup>4</sup>. The same survey was also administered to a comparison group of 400 undergraduate students not participating in Bass Connections (referred to hereafter as “non-Bass”). The non-Bass comparison group was selected to match Bass Connections students in terms of gender, race/ethnicity, class year, citizenship status, first generation status, student athlete status, transfer status and Duke admitting program.

By re-administering the same survey to both groups, we were able to assess self-reported gains for both populations over the course of the year. The analysis below includes findings for only those respondents who responded to both the pre- and post-survey in order to ensure a direct one-to-one comparison (n=111 for Bass participants; n=52 for non-Bass comparison group).

#### *A note on the effectiveness of the comparison group:*

To assess whether the non-Bass group was a suitable comparison group for the Bass Connections participant group, we compared the responses between the two groups on the pre-survey and found that there were no significant trends between how the groups responded on the pre-survey: on some items the non-Bass comparison group reported feeling more confident in their abilities, whereas on other items the Bass Connections participant group reported feeling more confident. There were only two items for which a statistically significant difference was found between the two groups on the pre-survey: 1) confidence in ability “Communicating research findings effectively based on the audience” (Bass group mean=3.78; non-Bass group mean=3.35); and 2) agreement with the statement “I am adaptable when confronted with challenges” (Bass group mean=4.00; non-Bass group mean=3.65).

### **Assessment of abilities in comparison to peers**

When asking students to assess their own skills and abilities, we grounded their perspective by asking students: “How do you think your abilities compare to other Duke students in the following areas?” Responses to 17 items were on a five-point scale ranging from far below average to far above average. The intent of this framing was to offer students a comparison basis that might also help tease out the unique contributions of Bass Connections by accounting for the range of other experiences in which students at Duke have the benefit of participating.

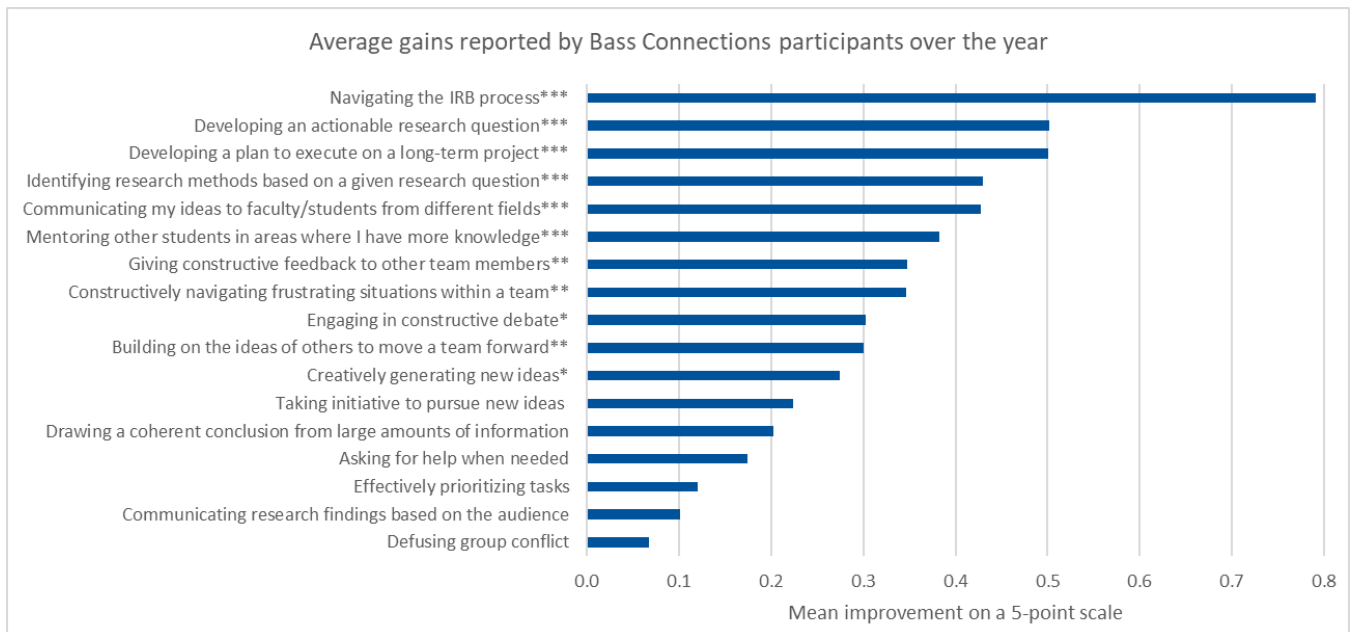
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<sup>4</sup> Additional undergraduate student participants joined teams throughout the year but did not receive the pre-participation survey based on the timing.



As shown in the chart below, between the pre- and post-survey, Bass Connections students reported improvements on all 17 items, with statistically significant gains noted for 11 of 17 items. **In contrast, students in the non-Bass comparison group did not report statistically significant gains on any of the 17 survey items.** Asterisks denote the degree of statistical significance with three asterisks denoting the highest confidence level (\*p<.05, \*\*p<.01, \*\*\*p<.001).

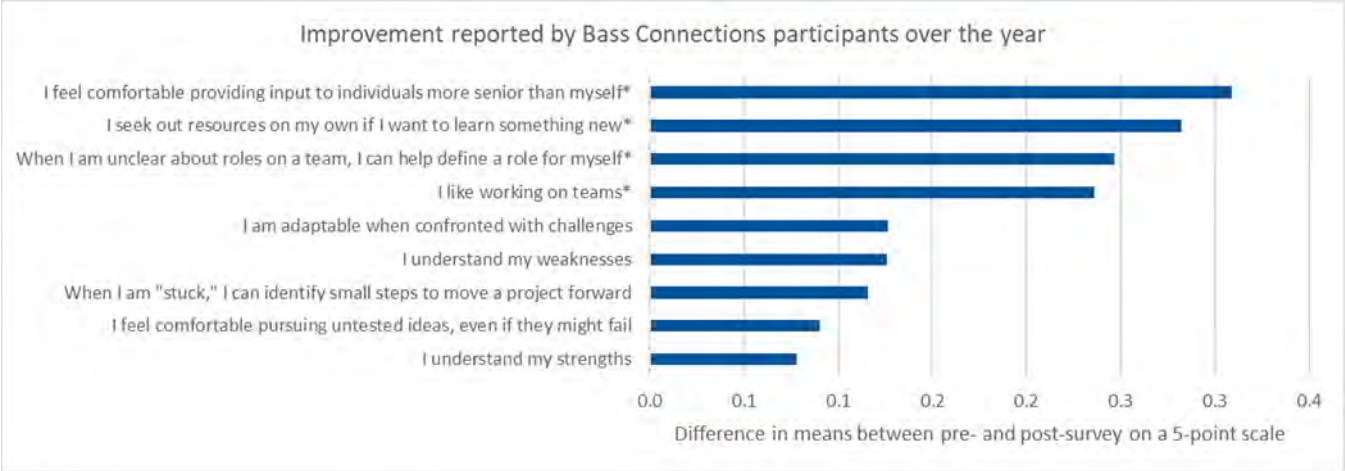
Bass Connections participants reported the largest gains in items related to conducting research and working within a team. The items with smaller reported gains relate to individual attributes and personal habits (e.g., effectively prioritizing tasks), defusing conflict and communicating research findings based on the audience.



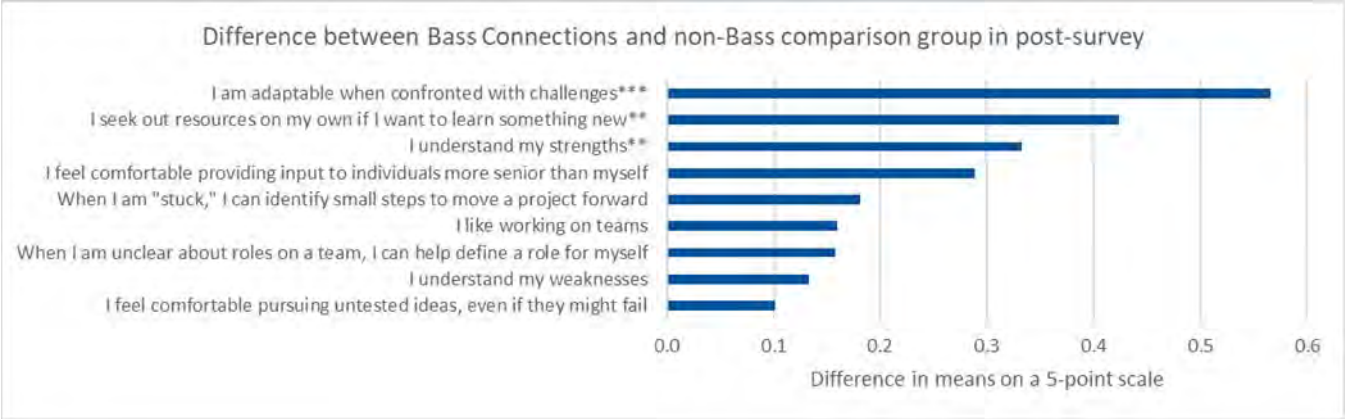
### Assessment of self-management and teamwork skills

When asked “to what extent they agreed” with a set of statements related to their abilities in self-management and teamwork, Bass Connections participants reported statistically significant gains between the pre- and post-survey on four of nine survey items. **In contrast, students in the non-Bass comparison group did not report statistically significant gains on any of the nine survey items.**

The chart below shows the size of the gain reported by Bass Connections participants between the pre- and post-survey on a five-point scale ranging from strongly disagree to strongly agree.

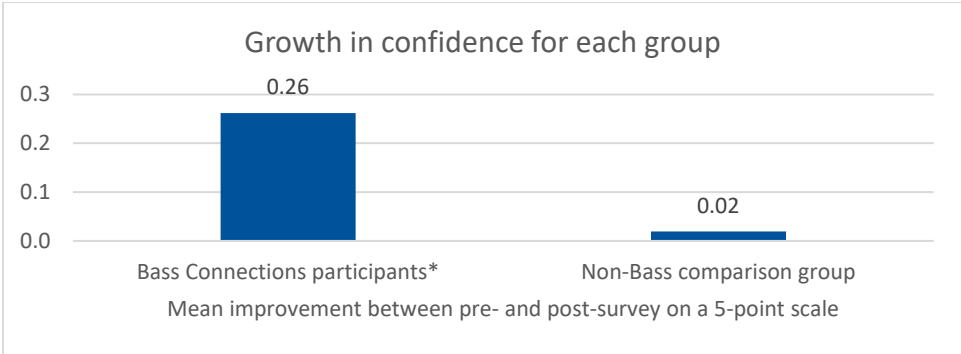


In comparing gains reported between Bass Connections participants, and the non-Bass comparison group, Bass Connections participants reported higher gains on each item, with statistically significant differences on three of the nine items, as noted below.



**Growth in self-confidence**

Finally, to assess whether Bass Connections helps develop a student’s confidence in their ability to contribute to an interdisciplinary research team, we asked both groups to rate on a five-point scale: **“How confident are you that you would have something to contribute to a research team of Duke students and faculty?”** At the end of the year, Bass Connections participants reported higher degrees of confidence at a statistically significant level.



### Benefits for graduate students

Graduate students were asked to rank the top three skills they developed by participating in Bass Connections, with one being the greatest impact. Graduate students most frequently reported benefiting from the opportunity to organize and manage projects and navigate team dynamics.

Graduate student skills	Rank 1	Rank 2	Rank 3	Total
Organizing and managing projects	17	11	11	39
Communicating with a team	9	16	13	38
Working with team members from diverse areas of knowledge	9	10	14	33
Content knowledge/expertise related to our team topic	11	6	10	27
Mentoring others	8	7	9	24
Research skills (e.g. literature review, research design, data analysis)	8	12	3	23
Ability to connect my academic experiences to broader social issues	7	8	8	23
Demonstrating leadership on a team	10	5	6	21
How to collect/analyze data	7	7	1	15
Comfort working with faculty	2	2	9	13
Solving complex problems	5	3	3	11
Presentation skills	1	7	2	10
Developing new networking connections	3	2	4	9
Working with external stakeholders	3	3	2	8
How to develop a grant proposal	2	2	2	6
How to write an academic paper	0	1	2	3

Graduate students, when asked to comment on the skills they developed, and how these skills might contribute to their future career paths, shared:

*Improved communication skills. I think interacting with the team openly and being a good listener at the same time helped me improve my communication skills as well as the quality of my work. [Graduate student]*

*Definitely the biggest attribute I developed that will be most helpful for my future career is project management/leadership. Balancing multiple projects/objectives simultaneously has been a great experience, as well as communicating and directing these objectives to the members of my team. [Graduate student]*

*The skills, methodologies, and frameworks I have learned through my Bass Connections project are directly applicable to my future career pursuits. The entire design thinking process can be used in almost every domain/field, be it product design or process/service design and I believe it is the very foundation of innovation, a skill in high demand in the tech industry. [Graduate student]*

### Benefits for team leaders

Team leaders were similarly asked to rank the top three ways in which they benefitted from participating in Bass Connections. The most commonly cited benefits include developing new

relationships with faculty and students, new research findings, and developing new knowledge and expertise in a research area.

Team leader benefits	Rank 1	Rank 2	Rank 3	Total
I developed new relationships with faculty and students in other parts of the university	19	9	11	39
Our team generated new findings for further research	13	18	6	37
I developed new knowledge/expertise related to our research topic	14	9	6	29
I improved my ability to mentor undergraduate students	6	10	13	29
Our team generated working papers, paper submissions, or publications	5	10	8	23
I established or strengthened an external partnership	4	8	11	23
The funding/student effort helped me seed a new research project or grant	10	4	6	20
I improved my ability to lead teams	5	6	7	18
I improved my ability to scope and organize complex research projects	2	1	7	10
I improved my ability to mentor graduate students	2	2	1	5

In written responses, team leaders shared several examples:

*There's a particularly meaningful moment that happens each year that usually comes sometime in late March or early April. Long before this moment, we've spent months working together getting the team up to speed on the details of the project and months pushing students past their comfort zone of short-term assignments into longer term deliverables. The moment usually comes after the students have doubted their ability to pull something together given other responsibilities. It's a moment when the students see not only that they CAN do something, but that they already HAVE: they've moved past the biggest intellectual hurdles and most of what they need to do is put in their time to execute on the idea, and they know they will have a final product. That's a special moment for the team. [Team leader]*

*This has been my 5<sup>th</sup> Bass Connections project and each year has been a different topic about sustainability on campus or regionally. This, however, was the first time that I was main point person and I found it to be a valuable opportunity for personal growth and I have learned many things that will inform future projects I do. [Team leader]*

*The rich experience working with the graduate student program coordinator, my colleague [REDACTED], and the 5 undergraduate students - seeing that develop over time while working together on a shared and creative project, was the most meaningful. This is not an experience that I have had in a classroom environment, or any other projects with colleagues. [Team leader]*

*The most meaningful part about my Bass Connections experience was the relationships that developed from my time in the classroom. I had the opportunity to interact with the students and learn from them and the professors. I also felt very part of the class and contributed every time we met. [Team leader]*

For more information about the *long-term* benefits of participating in Bass Connections for faculty, read our [Evaluation of the Impact of Bass Connections on Faculty Research, Pedagogy and Relationships](#) report.

### Considerations for the future

- While Bass Connections contributed to the engagement of many undergraduate students, these benefits were not uniform. How can Bass Connections ensure a more consistent experience?
- Are there skills gaps that we would expect the program to be addressing but for which the evidence is lacking? What might this tell us?

## Finding 4: Bass Connections teams engage in high levels of collaboration and teamwork, with some gaps

A significant component of Bass Connections is the high level of interdisciplinary collaboration and teamwork. As noted [above](#), our past evaluation efforts indicate that team structure and teamwork are critical to the satisfaction of participants. To support teams, we regularly share best practices for setting up and managing teams through an annual orientation, training for project managers and access to [team resources](#).

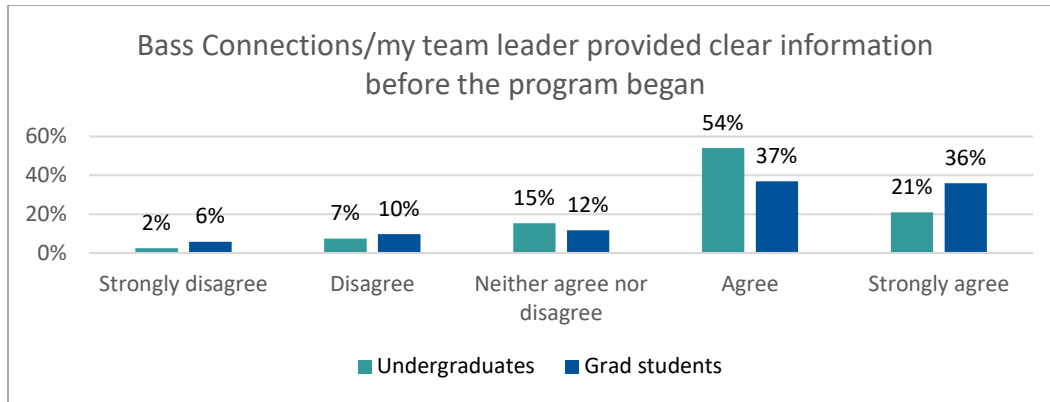
We assess the effectiveness of these efforts, and the extent to which teams struggle with team formation and operations, through the annual survey. Like prior years, this year's survey finds that most teams have strong team operations, although some teams still struggle to provide students with a clear sense of the team's goals and their role in contributing to the success of the team.

### Clarity of information at program onset

To assess baseline awareness of the goals of Bass Connections, and the goals of individual project teams at the onset, we asked team leaders to what extent "The goals for the Bass Connections program were clear from the start" and found that 92% of team leaders understood the program goals. The 8% of team leaders who indicated that they were neutral or disagreed with this statement are likely new to the program.

From a student perspective, the majority of participants agreed that they were provided clear information before the start of the program, although they were less clear on the goals in comparison to the team leaders. This variance can be expected, as team leaders conceive of the project but may not fully communicate these details to students. While students can view detailed project descriptions on the Bass Connections website when applying, and also receive an offer letter to join teams with additional project information, we hypothesize that one reason why students might feel that they do not receive clear communication before the program begins is the lag between when students are accepted (generally in March) and when the team activities begin (teams may start as early as May, but many begin in August).

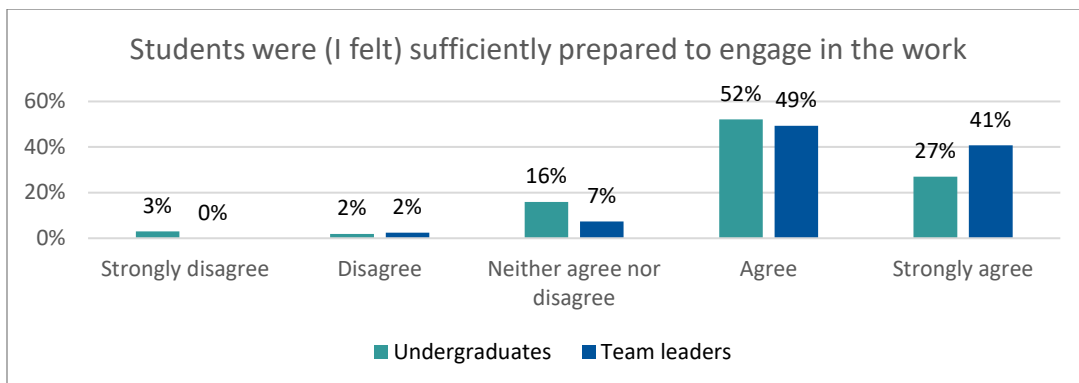
Notably, graduate student responses were more variable than undergraduate students. One reason for this variability may be the varying role of graduate students on teams which can range from serving as a co-leader, project manager or student participant. Graduate students may also expect greater clarity.



### Student preparedness

Bass Connections aims to provide an accessible research opportunity for entry-level researchers. The program’s layered mentoring model supports this design by creating opportunities for graduate students to mentor undergraduate students on research methods. That said, students with heavy training needs can slow the progress of teams. To gauge the extent to which students are prepared to engage in their projects, team leaders and undergraduate students each responded to the following question:

- Undergraduate students: I felt sufficiently prepared to engage in the project
- Team leaders: Students were sufficiently prepared to engage in the work



Consistent with past years, team leaders voiced very little concern about the level of student preparedness, whereas undergraduate students tended to be less confident in their own abilities: almost 80% of undergraduate students agreed that they were sufficiently prepared to engage in the project, compared to 90% of team leaders.

Written comments, primarily from undergraduate students, reveal that a lack of confidence and knowledge can impact how students contribute to the team and the team’s overall progress:

*It was probably the first time I've had to try and answer questions no one else had the answers to, which meant I was also asking if I was even pursuing the right questions. It was an experience that was initially overwhelming that I did not feel skilled enough for, but in the end, I felt I grew both as a person and as a researcher. I learned about myself,*



my environment, and how to approach uncertainty and doubt in the midst of new experiences. [Undergraduate student]

Because I came onto this team with very little knowledge of the topic, it was difficult at first to overcome that first learning curve and familiarize myself with the language and vocabulary of the subject. I also found it challenging when I was first learning how to use Excel for data analysis, but with the help of our graduate student team leader and my team members, I was quickly able to pick up on these skills. [Undergraduate student]

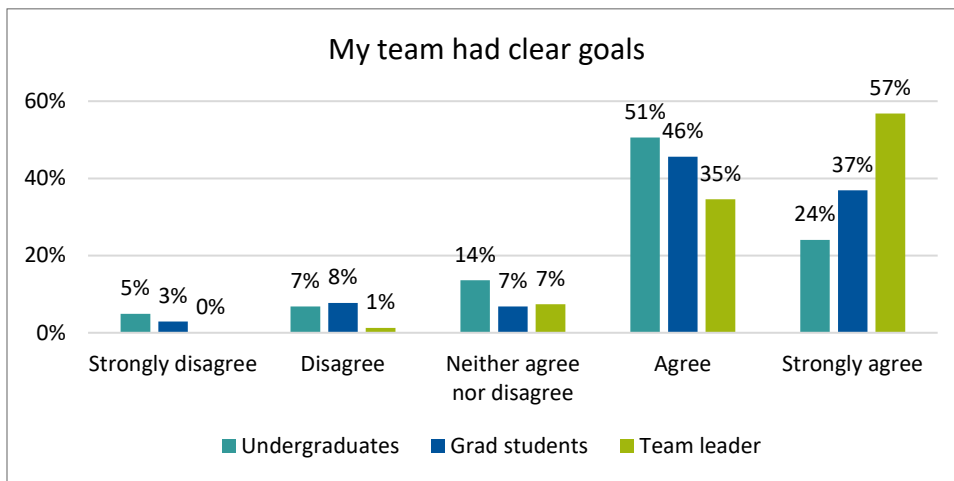
There were several programming elements that I was very unfamiliar with at the start. I struggled to match the speed of my partners for some work because I did not have background in certain coding languages or processing platforms. Once I made that clear to my team, however, we were able to collaborate and help me learn or reassign me to a different task. [Undergraduate student]

I think the most challenging is spreading the tasks and training across the students based on their skills. Maybe if there is a skill – such as statistics and software – that some team members do not have, it could be useful if Bass Connections organized ways to provide these skills. At the same time, this is no easy [way] to provide for a lot of students because of scheduling. [Team leader]

### Clarity of project goals, roles and timelines

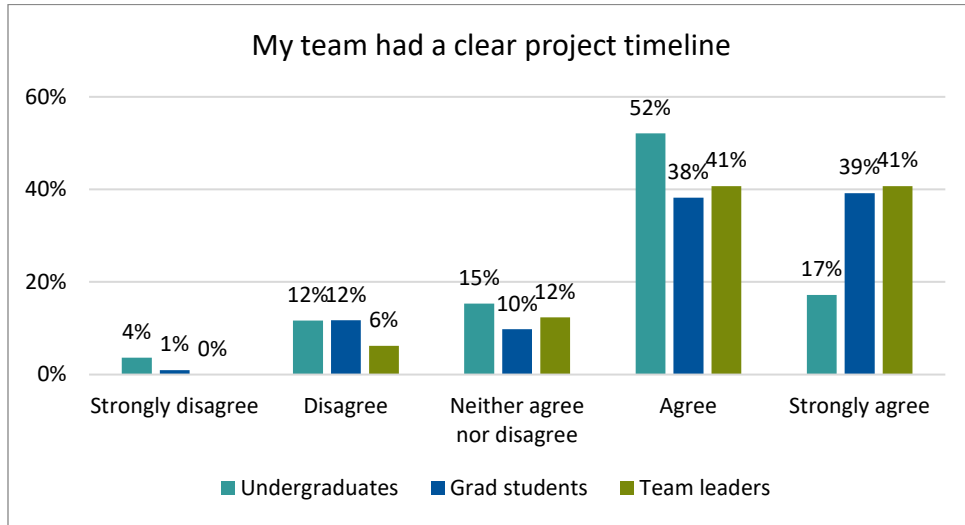
As noted, our prior evaluations have found that team success and student engagement are heavily predicated on the extent to which all team members understand the goals and timeline for the project. As such, we encourage teams to work collaboratively to create a project charter and project plan at the onset of the project. That said, we also understand that teams starting new research projects may be less clear on their goals or approaches in the beginning and that the process of helping to scope a project from conception is a valuable, if not ambiguous, experience for students.

At the end of the year, the majority of team leaders (92%) agreed or strongly agreed that their team had clear goals. While the majority of students also agreed with this statement, students – particularly undergraduates – had higher disagreement rates and more variable responses (75% of undergraduate students agreed/strongly agreed, 83% of graduate students agreed/strongly agreed).



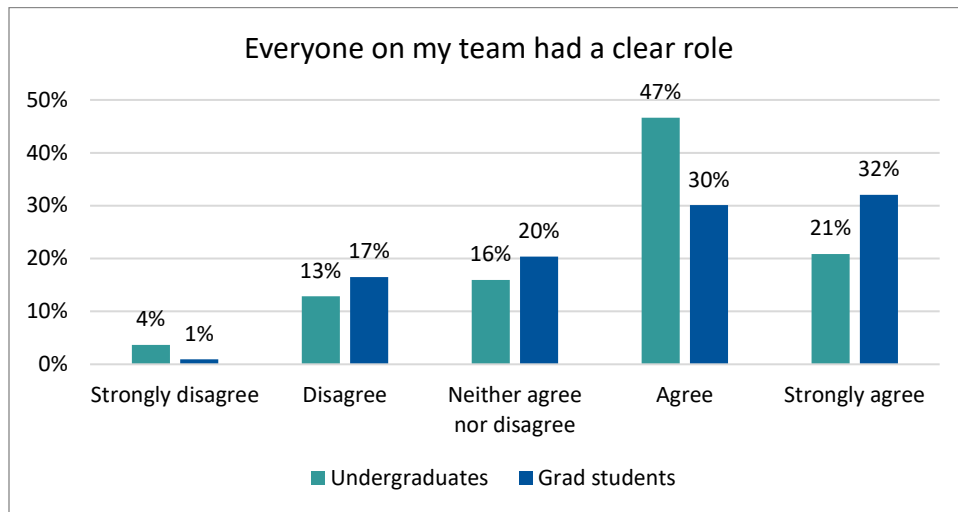
**Project timelines**

Similarly, while the majority of respondents indicated that their team had a clear project timeline, team leaders and graduate students were more likely than undergraduate students to agree with this statement. We hypothesize that this may be because team leaders, often collaborating with graduate students in project manager roles, may set a timeline but fail to fully communicate that timeline to the entire team. It is also possible that even when teams leaders communicate timelines to students, students may not understand the timeline or may find it unrealistic.



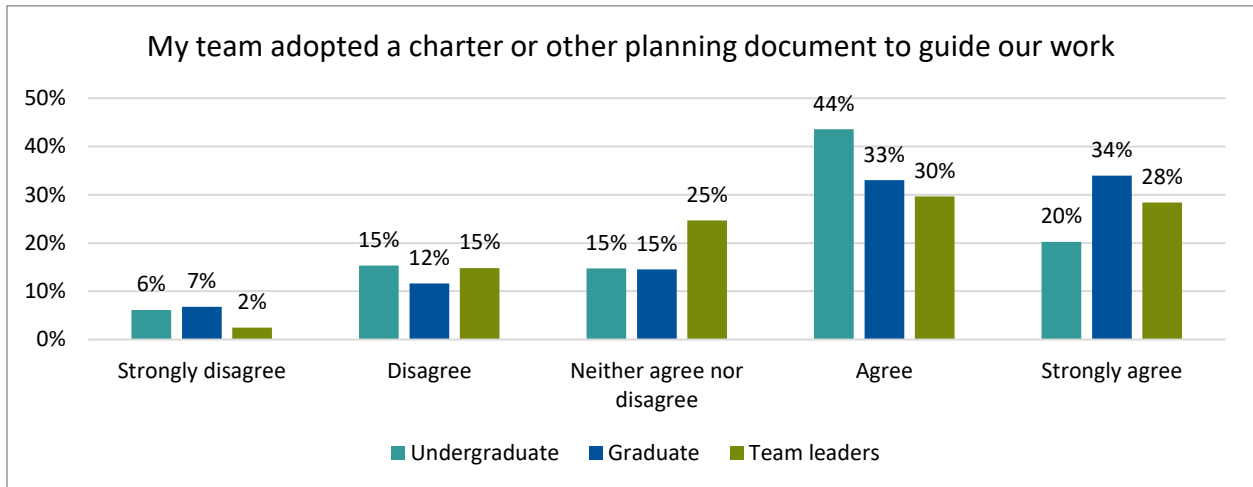
**Clarity of roles for individual participants**

We also assess the extent to which students feel that they have a clear role on their project team. Our past evaluation efforts have found that ensuring that all team members have a clear sense of how they can contribute to the team is very important to student engagement and overall team success. As shown below, while the majority of students had a clear sense of their role, a sizable minority of students disagreed with this statement. Consistent with past years, graduate students are generally more likely to disagree with this statement. We hypothesize that graduate students may expect, and desire, more concrete roles and means of contributing than undergraduate students.



## Project charters and planning

While teams are not required to use a project charter, we strongly encourage teams to use a charter or other planning document to address many of the issues mentioned above related to goal, timeline and role clarity. Yet as shown below, while the majority of respondents in all survey groups report that their team used a planning document, a sizeable minority reported that their team had no such document.



Comments on team goals, roles and timelines include:

*Although the team leaders had a clear vision of what the project was about, and was very willing to help plan the project, at times, it became difficult to know what the next step or next experiment is that would advance our team forward towards our goal. [Undergraduate student]*

*Because the specifics of the educational materials we were creating were not known when we started, creating a schedule / work plan was difficult. As someone who teaches very syllabus-driven / deadline-focused courses, the more open nature of this course was difficult for me. Not sure that Bass Connections could have helped any... [Team leader]*

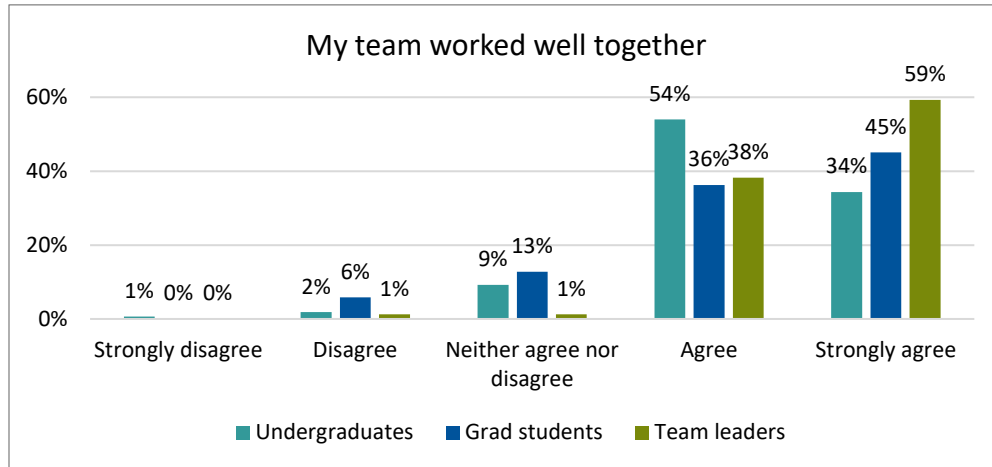
*Took a while for the project focus and timeline to crystallize. Partly due to the nature of the policy work, partly due to at times, limited coordination/communication and time constraints to plan among leaders. However, it really came together nicely as things progressed as additional support was brought in. [Team leader]*

*Overall, participating in Bass Connections was a rewarding experience. However, I think to save some time and energy, the projects should be thoroughly vetted to ensure that they are attainable by the group. For example, several large organizations and even governments have tried to ... [accomplish our goals], yet a streamlined methodology for this still does not exist. I think it was a bit ambitious to assume that we would be able to achieve this in our short timeframe. That being said, we after narrowing our approach, we made incredible progress and I am proud to have contributed to our final deliverable. If the project was more narrow at the beginning, we probably could have made even more progress. [Graduate student]*

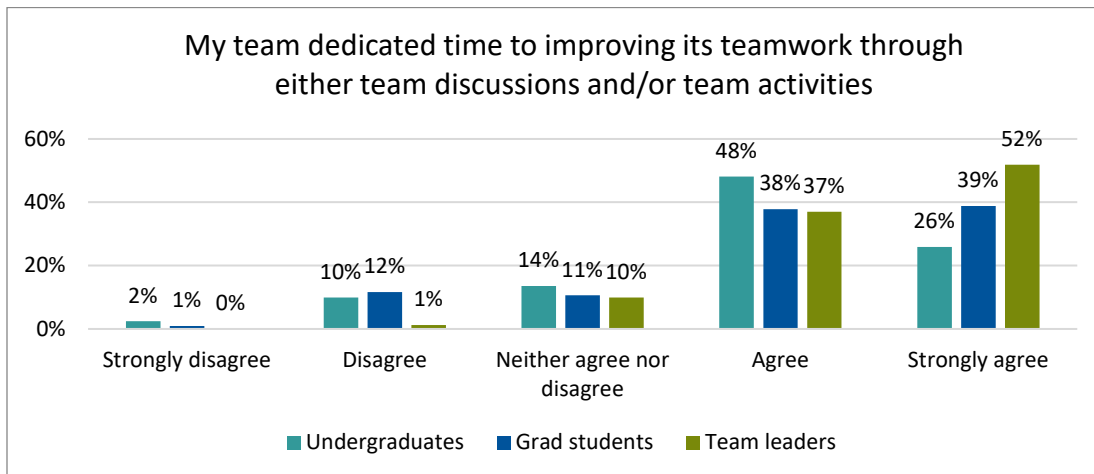
*The most challenging part of my experience was not having clear goals set up for second semester. First semester was very structured, but it felt as though second semester was a free for all. [Undergraduate student]*

### Teamwork

Given that Bass Connections is a collaborative research experience, the ability of teams to work well together is important to the success of teams as well as the participant experience. Consistent with prior years, the vast majority of participants agreed that their team worked well together (agree/strongly agree rates: 97% of team leaders, 88% of undergraduate students, 81% of graduate students).



To support the development of strong teams, Bass Connections provides teams with resources and encouragement to focus on team building at the onset of projects. As indicated below, while the majority of participants agreed that “My team dedicated time to improving its teamwork through either team discussions and/or team activities,” a fair number of graduate and undergraduate students disagreed with this statement.



Written comments add additional context to the benefits and challenges that teams face in working with one another:

*Our undergrads were good students, but all six were pretty introverted and it was frequently a challenge to get them to engage and interact with each other and with us. [Team leader]*

*The program [Bass Connections] helped to create a more structured and team-oriented research project for students. Compared to a traditional individual research project, this led to a much more engaged interaction between the students, the project and myself. [Team leader]*

*My Bass Connections team had everything required for a team to be successful, team members with diverse experiences, open culture and the right amount of guidance. I feel happy and content that I was given an opportunity to be a part of this experience. Honestly, I feel deeply connected to all my project members and team leaders and this project became a critical part of my life in the past nine months. I look forward to having this experience one more time in my life! [Graduate student]*

*I really enjoyed the interdisciplinary nature of my Bass Connection experience. Working with undergrads, graduate students from different backgrounds, and faculty and staff was incredibly rewarding and allowed me to create new connections and friendships that I would not have been able to make otherwise. Further, by establishing a baseline of equality among the team members and leads, we were able to work cohesively without any power dynamics hindering our ability to participate in each discussion and meeting. [Graduate student]*

*I was able to gain an understanding of what it's like to work with a team composed of people with different areas of expertise. While sometimes navigating the group dynamic was challenging, I feel like I've come out of it with a better understanding of what a healthy team looks like and how to set myself up for success in the future. [Undergraduate student]*

### **Teamwork on larger teams with a sub-team structure**

Depending on the size of the team and project goals, teams often divide into “sub-teams” based on areas of expertise, interests or goal areas. While the sub-team model makes it more efficient for larger teams to organize work, several survey comments indicate that this team structure may lead to a more disjointed team experience.

*At times, it felt like our roles in our sub teams were unclear. Because of this, I ended up doing more than I thought was a fair share of work. [Undergraduate student]*

*The overall project felt unorganized and siloed, but my sub-team felt the exact opposite. They were a pleasure to work with! [Graduate student]*

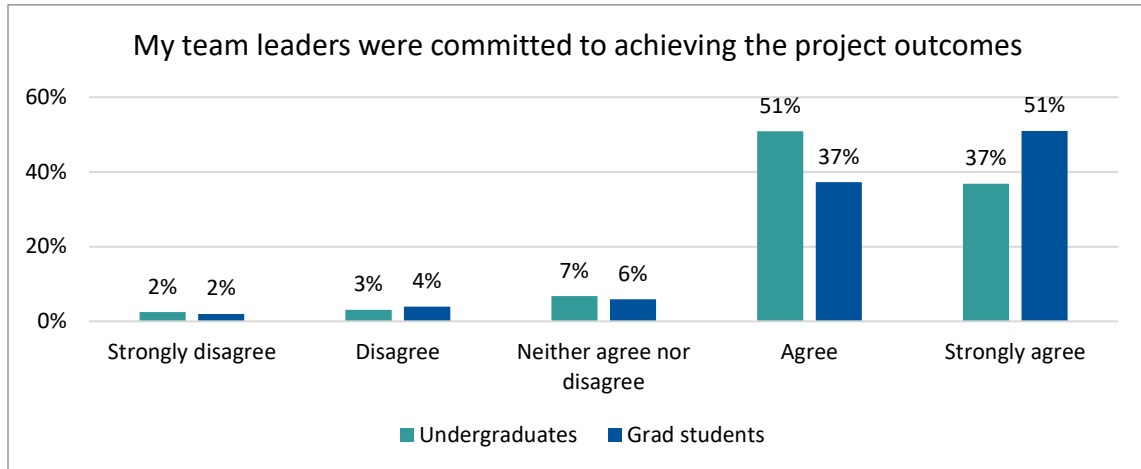
*It was not always clear how each of the three aspects of our project fit together, and very often, we did not hear much about the social sciences aspect of our project. [Undergraduate student]*

*The most challenging part of the experience was working cohesively as one team. Though we had many sub-teams with all sorts of overlap, it was a fairly large team that sometimes struggled to keep lines of communication open. There were often conflicting ideas about*

*how to get things done and sometimes tension when things didn't go as planned, but we ended up making great progress over the course of the year and figuring out the issues for the most part. [Undergraduate student]*

### Team leader engagement

The engagement of team leaders in the project is also critical to team success and student engagement. While the majority of students agreed/strongly agreed with the statement, “My team leaders were committed to achieving the project outcomes,” 12% of both undergraduate and graduate students were neutral or disagreed with this statement.



The qualitative responses below provide more context for the discrepancies in the perceived commitment of some team leaders, as well as the powerful relationships developed between many students and faculty.

*The amount of support Eric Richardson, Paul Fearis, and Joe Knight were willing to give throughout this process, even with the pandemic; it allowed me to build my confidence as a team leader and engineer. That, coupled with the freedom to develop innovative solutions to self-identified (and clinician-validated) problems, made for an amazing experience that has grown our abilities as engineers and entrepreneurs. [Graduate student]*

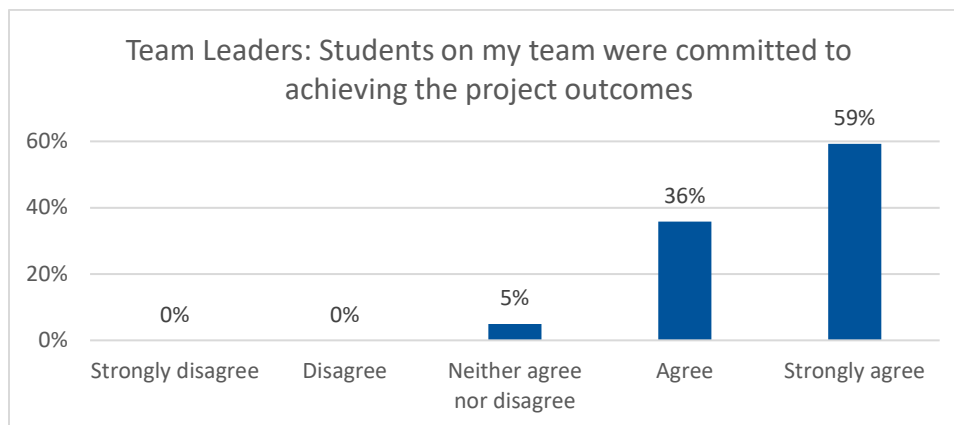
*The leadership team lacked clear roles and seemed stretched. Bass Connections could provide (insist upon) more training for team leads and direction on how to manage a teaching team of 3+ instructors. The lack of organization from the teaching team inherently trickled into our students' experience, and made the endeavor more stressful for instructors. Bass Connections should offer a salary benefit to its teaching teams for the tremendous experience and products they provide for the University. [Team leader]*

*It takes a lot of top down effort if team leaders want to control project direction. Often it felt like team leaders wanted to be involved but didn't have time to be, and that stalled progress all around. The team leaders also had very different visions of the year from each other and from the team. It got better over the semester, but team leaders should be advised to sort out their own conflict so that it doesn't affect their students. [Undergraduate student]*



## Student engagement

Given the many competing priorities that students often juggle, teams occasionally experience challenges with waning or inconsistent student commitment and effort. To assess the degree to which student effort presents a challenge for teams, team leaders were asked to indicate the extent to which they agreed that “Students on my team were committed to achieving the project outcomes.” A vast majority (95%) agreed with this statement, with the remaining being neutral.



Team leaders shared:

*We had a great team of undergrads this year who were led by three enthusiastic PhD students. It was nice to see them divide and conquer a series of challenges. In the end they got a lot of hands on experience with lab work and literature synthesis and they all jointly authored a really excellent summary of their findings. [Team leader]*

*The only thing that may have been beneficial is to make sure the students understand the commitment up front. I think some of the students were on board until they talked to their academic advisers and realized that this class was not a priority for their graduation requirements. I don't know that Bass Connections can really solve this problem, but possibly working with academic advising and curriculum design to make a Bass Connections project more appealing from an academic career standpoint would help? [Team leader]*

Student comments also offered insight into their own challenges with juggling project commitments alongside their other commitments:

*The most challenging aspect of my Bass Connections experience was balancing the workload of an independent study with my other coursework. At times, I would focus exclusively on my other coursework as my Bass Connections project did not have as many deadlines as my other classes. My engagement in three independent studies via my Bass Connections project taught me the importance of balancing time/scheduling. [Undergraduate student]*

*The other members of my team did not want to put the necessary effort into the project to help it live up to its full potential/our original vision. The professor seemed satisfied with the minimal effort, so no one was inspired to dig deeper. [Undergraduate student]*

*The most challenging part was working with, and motivating, other team members who did not attribute as much emphasis to the research team as I did. This is true of any group, and although it was difficult to keep them on task, it was a valuable lesson for group work in my future. [Undergraduate student]*

### **Impact of COVID-19**

Beyond on-campus research and meetings, teams often travel to conduct field research or to present research at conferences. When the university transitioned to remote learning in March of 2020 due to the COVID-19 pandemic, many teams had to adapt their plans with little notice. Although the end-of-year survey did not specifically inquire about the impact of COVID-19, some respondents took the opportunity to comment on the impact of this transition, often highlighting how participants worked together to re-imagine teamwork and research processes. Many team leaders noted that students showed both flexibility and continued commitment to their projects, while some team leaders noted challenges with navigating unexpected changes to their objectives.

*[On what was most meaningful] Ability to keep a research project going in the COVID Era! We had to adjust very quickly to communicating virtually. [Team leader]*

*I learned a lot about how to work with undergraduates, and in this semester specifically, how to cope with remote collaboration. [Team leader]*

*Moderating disappointment when the work was slower than students expected. Obviously, the biggest challenge is helping to maintain the work standard and spirit of teamwork as everyone is dealing with the COVID crisis (both mentally and logistically). [Team leader]*

*As for most people, the COVID situation threw off a lot of our efforts. Bass did a great job adapting and making the communication of expectations clear. [Team leader]*

*The start of the second semester is typically the hardest part with students losing a degree of interest over winter break and the start of spring fatigue typically being manifested through reduced productivity. However, this year the disruptions due to COVID also made things a bit challenging timing-wise and resulted in additional lost time. However, the spirit of the students seemed in a way strengthened by the situation, and they impressed me greatly through that experience. [Team leader]*

*We had to cancel all our trips due to COVID19 and suspended our lab work as well. [Team leader]*

### **Considerations for the future**

- How can Bass Connections ensure that all students and team leaders have a clear sense of the program's goals and expectations at the onset?
- How can Bass Connections encourage more teams to use project charters or other planning resources to ensure that all participants understand the project goals and their role?
- How can Bass Connections encourage more reliable engagement from students and faculty?
- Given the wide-range of project teams, how can Bass Connections ensure that each team has the resources and support relevant to their specific team and dynamics?

## Finding 5: Team leaders feel supported by Bass Connections

Every Bass Connections project aligns with at least one of five thematic areas: Brain & Society; Education & Human Development; Energy & Environment; Information, Society & Culture; Global Health. Each thematic area is hosted by one of Duke's interdisciplinary institutes and initiatives, and selected Duke faculty and staff serve as theme administrators and leaders. Projects that align with the Bass Connections model but do not fit within one of these five themes are part of Bass Connections Open, which is managed by the Bass Connections central team. The central team also provides program-wide guidance, policies, communications and best practice resources.



When team leaders were asked to what extent they agreed with the statement: “I have felt supported by theme leader(s) and staff,” 60% of respondents strongly agreed, 28% agreed, 10% neither agreed nor disagreed and 1% disagreed. In written responses, team leaders remarked:

*I have a lot of responsibilities to keep the students safe and productive during working abroad. However, Bass Connections staff was very helpful in this case. [Team leader]*

*Bass Connections support has been super. [Team leader]*

*Bass Connections was instrumental in creating a format for interdisciplinary and interinstitutional research through funding, structure, and campus-wide recognition. [Team leader]*

*The Bass Connections team was AWESOME. Everything was laid out and clear right from the beginning and there were ample workshops and guidance to make sure we knew we were on track. [Team leader]*

### Considerations for the future

- Are there gaps in the guidance and support that Bass Connections offers team leaders? Are there ways that the program can make it easier for faculty to lead teams?

## Conclusion

The annual evaluation data included in this report provides us with meaningful feedback each year as we aspire to ensure that participants – of all levels – have a productive and meaningful research experience. We use this data each year to examine practices across the program and identify opportunities to provide teams with greater support, as well as to assess the extent to which Bass Connections is contributing meaningfully to the development of students.

While the evaluation data summarized in this report affirms that Bass Connections provides a positive and valuable experience for the vast majority of participants, there remain small inconsistencies across the program that we hope to continue to reduce by providing teams with models and structures for team success. At the same time, we recognize that the program is strengthened by allowing teams the flexibility and autonomy to structure and operate their team in ways that best support their individual project goals. In fact, this flexibility has enabled teams to introduce new innovations that have become best practice models for other teams.

As Bass Connections enters its eighth year, the program model continues to gain recognition not only at Duke, but also at peer institutions. In the coming year, we will focus our evaluation efforts on sharing lessons learned from our past evaluation efforts externally while also beginning new efforts to assess the longer-term impact of the program on alumni.