

Impact on Undergraduate Student Development: Results of a pre- and post-program participation assessment from 2019-2020 to 2021-2022

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Overview and methodology

For three years (2019-20, 2020-21 and 2021-22), Bass Connections partnered with the Trinity Office of Assessment to administer a pre- and post-participation survey to undergraduate students participating in Bass Connections and a comparison group of undergraduate students. The 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.

Each group was asked to respond to 26 Likert scale questions at the beginning of the year, and then again at the end of the year. 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. One set of these questions asked respondents to assess their skills in relation to other Duke students. Another set of questions asked respondents to what extent they agreed with various statements related to their current skills and capacities. All question items corresponded to skills and attributes that we would expect Bass Connections to help a student develop in the following areas: research skills, interdisciplinary teamwork, critical thinking, communications and self-management.

To ensure a direct one-to-one comparison, our analysis of these assessments only includes those respondents who completed *both* the pre- and post-surveys. Unfortunately, this results in relatively small response rates, particularly for the comparison group (see Table 1). This difference in response rates between groups is predictable since the comparison group was invited to participate by the Office of Assessment as part of a general study, whereas Bass Connections participants were informed that the study was related to Bass Connections, a program with which they had some relationship.

Table 1: Response rates for both the pre- and post-surveys

Academic Year	Bass Participants	Comparison Group
2019-2020	29.1% (n=111)	13.0% (n=52)
2020-2021	19.2% (n=88)	8.3% (n=45)
2021-2022	13.8% (n=56)	3.5% (n=18)

Findings

This section summarizes self-reported gains for Bass Connections participants vs. the comparison group for all three years of the study. The results show some inconsistencies, but also some consistent trends. When considering these results, **it is important to acknowledge that the student experience in Bass Connections, and at Duke, was impacted by COVID-19 during all three years**, albeit in changing ways as the course of the pandemic evolved.

Research and Teamwork Abilities: Bass Connections Participants vs. Comparison Group

When asking students to assess their own skills and abilities in research and teamwork areas related to the goals of Bass Connections, we grounded their perspective by asking: “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* (1) to *far above average* (5). The intent of this framing was to offer students a comparison basis

that might also help tease out unique contributions of Bass Connections by accounting for the range of other experiences in which students at Duke have the benefit of participating.

The table below shows the difference in the mean on a five-point scale between the pre- and post- responses for Bass Connections participants and the comparison group, where a positive number indicates a mean improvement. Asterisks denote the degree of statistical significance with three asterisks denoting the highest confidence level (* $p < .05$, ** $p < .01$, *** $p < .001$).

The results below show some inconsistencies across program years (i.e., some items for Bass Connections participants show significant improvements in one year, followed by insignificant improvements, or minor declines in some cases). **However, as indicated by shading in the table, significant improvements were found in at least two of the three years for six survey items for Bass Connections participants. By contrast, students in the non-Bass Connections comparison group did not report statistically significant gains on any of the 17 survey items in even one single year.**

Table 2: Mean changes in students' self-assessment of ability over the year

Item	Difference in means b/t pre- and post-surveys, on 5-pt scale					
	2019-20		2020-21		2021-22	
	Bass	Comp.	Bass	Comp.	Bass	Comp.
Developing an actionable research question	0.50***	0.10	0.25*	0.27	0.45*	0.39
Identifying appropriate research methods based on a given research question	0.43***	0.09	0.33*	0.09	0.36*	0.17
Developing a plan to execute on a long-term project	0.50***	-0.11	0.16	0.29	0.46**	-0.06
Navigating the IRB process	0.79***	0.21	0.56*	0.09	0.68*	0.44
Drawing a coherent conclusion from large amounts of information	0.20	0.12	0.15	0.09	0.36**	0.11
Creatively generating new ideas	0.27*	0.15	0.15	0.02	0.55	0.17
Communicating research findings effectively based on the audience (e.g., experts vs. general populations)	0.10	0.24	0.38**	0.11	0.29	0.17
Effectively prioritizing tasks	0.12	0.01	0.01	0.29	0.23	0.06
Taking initiative to pursue new ideas	0.22	-0.26	0.10	0.27	0.07	0.22
Effectively communicating my ideas to faculty and students from different fields of study	0.43***	-0.07	0.34*	0.20	0.07	-0.17
Constructively navigating frustrating situations within a team	0.35**	-0.01	0.08	0.20	0.19	0.00
Defusing group conflict	0.07	0.10	-0.24	0.00	-0.05	-0.11
Engaging in constructive debate	0.30*	-0.15	-0.03	0.00	0.25	0.17
Asking for help when needed	0.17	0.03	0.22	-0.02	-0.04	0.17
Giving constructive feedback to other team members	0.35**	0.16	0.01	-0.07	0.14	-0.44
Building on the ideas of others to move a team forward	0.30**	0.02	-0.03	0.01	0.34*	0.06
Mentoring other students in areas where I have more knowledge	0.38***	-0.10	0.07	0.00	0.02	0.17

Assessment of Self-Management Strengths: Bass Connections Participants vs. Comparison Group

Respondents were next asked “to what extent they agreed” with a set of nine statements related to self-management and teamwork, on a five-point scale ranging from *strongly disagree* (1) to *strongly agree* (5).

The table below shows the difference in the mean on a five-point scale between the pre- and post- responses for Bass Connections participants and the comparison group, where a positive number indicates a mean improvement. Asterisks denote the degree of statistical significance with three asterisks denoting the highest confidence level (*p<.05, ** p<.01, *** p<.001).

The results to this set of questions show fewer statistically significant changes, and also show some inconsistencies across program years for both populations. **However, as indicated by shading in the table, significant improvements were found in at least two of the three years for two survey items for Bass Connections participants. In contrast, students in the non-Bass Connections comparison group did not report statistically significant gains on any of the nine survey items in even one single year.**

Table 3: Mean changes in students’ self-assessment of self-management strengths over the year

Item	Difference in means b/t pre- and post-surveys, on 5-pt scale					
	2019-20		2020-21		2021-22	
	Bass	Comp.	Bass	Comp.	Bass	Comp.
I am adaptable when confronted with challenges	0.13	-0.09	-0.04	-0.04	-0.06	-0.06
I feel comfortable providing input to individuals more senior than myself (e.g., faculty)	0.31*	0.09	0.32*	0.00	0.11	0.06
I feel comfortable pursuing untested ideas, even if they might fail	0.09	0.08	0.39**	0.13	0.20	0.11
I like working on teams	0.24*	0.04	0.11	-0.13	-0.09	0.00
I seek out resources on my own if I want to learn something new	0.28*	0.05	-0.23*	0.11	0.12	0.11
I understand my strengths	0.08	-0.06	0.22*	0.00	-0.04	-0.11
I understand my weaknesses	0.13	0.00	0.14	0.02	-0.09	0.06
When I am "stuck," I can identify small steps to continue moving a project forward	0.12	0.12	0.36*	0.18	-0.05	-0.11
When I am unclear about roles on a team, I can help define a role for myself	0.25*	0.03	0.32*	0.33	0.21	-0.28

Concluding notes

Given the many opportunities available to Duke students, we believe that it is notable to find significant improvements between the Bass Connections participant group and the sample group. The low response rates and the impact of COVID-19 during the assessment period do add a haze to our ability to interpret these findings. While we will not repeat this assessment in 2022-23, we do plan to repeat this assessment in future years once student life has better stabilized.

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