Bridge to Calculus: Data Team

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What is Bridge to Calculus (BTC)?

- Program created to empower students from underserved communities to succeed in advanced math classes
- Prepares high school students for AP Calculus and other high-level math courses
- Primarily a six-week summer program with other supplemental events

Why is Data Important to BTC?

- Required to qualitatively and quantitatively describe the impact of the BTC program on Boston youth
- Allows participants to share their experience, opinions, and potential improvements to the program
- Shows program success to help acquire funding for summer program and additional events

Project Overview

The goals of BTC Data Team were to:

- Organize / analyze existing data
- Collect feedback from students and instructors at BTC events
  - Calculus Field Day
  - Computational Thinking and Equity Workshop
- Begin a database of BTC alumni

Existing Data (pre-Spring 2022)

In Fall 2021, a BTC volunteer analyzed BTC's data for a Capstone project.

- Conclusions
    - Students reach high level of enjoyment
    - Students feel supported in their programs
    - BTC increases students' critical thinking and problem-solving skills
    - BTC needs to work on improving students leadership and teamwork skills
- Recommendations
    - Continue collecting data about how students feel about the program
    - Ask students to reflect on their skills before and after the program
    - Ask students to report their AP scores after graduation
    - Learn how BTC affects students' STEM career interest and identity

Computational Thinking and Equity (CTE) Workshop

Overview

- 4-day online event for 19 students with instructors and alumni
- Worked in groups to create algorithms for college admissions
- Presented results to panelists and compared data with other groups

Our Contributions

- Created student survey to collect demographics, feedback on instructors / guest speakers, and confidence in CTE
- Created instructor survey to collect feedback on training and experience with students / other instructors
- Summarized feedback and survey data to send to instructors

Computational Thinking and Equity (CTE) Workshop [cont.]

Student Survey Results

- All students* agreed that they:
    - enjoyed the camp
    - loved the instructors
    - learned more about computational thinking and equity
    - now think more deeply about equity
    - are now more comfortable using spreadsheets and communicating in STEM fields
    - would participate in the program again
    - would recommend the program to a friend

*based on the 12 responses of 19 total students

Calculus Field Day (CFD)

Overview

- Annual event sponsored by the NEU's Mathematics department
- Students compete in teams of three in tests covering Precalculus, Calculus, and AP Calculus

Our Contributions

- Revised sign-up form to collect relevant information
- Compiled contact list for math teachers and guidance counselors in Boston Public Schools (BPS)
- Informed BPS contacts about CFD

Alumni Database

Goals

- Stay connected with students after high school and college
- Record AP Calculus Scores and colleges / majors
- Determine successful alumni to be featured on BTC's website
- Increase long-term volunteers and employees for BTC

Our Contribution

- Created surveys for BTC Alumni (high school students, college students, and college graduates / full-time employees)

Alumni Database (cont.)

Next Steps

- Surveys will be used to collect relevant data
  - Contact info
  - College / Major
  - Interest in volunteering
  - AP Scores
  - STEM Interest

  - Current / Desired Profession
- Recommended creating a Linkedin to connect with lost, older BTC Alumni

Project Challenges

- Inability to acquire certain information for BPS students (ex. AP scores)
- Delays in access to existing data (Power BI)
- Significant change of project scope
- Short notice for Calculus Field Day
- Required collaboration between Communications and Operations (15 people total)

Lessons Learned

We learned how to:

- acquire data using varied methods (ex. direct vs. open-ended)
- summarize / present data in alignment with program goals
- pivot our efforts with new project scope
- communicate / collaborate across multiple teams

We also learned that:

- "relevant" data is subjective
- balancing vision and logistics is important

Questions?