

<u>https://first2network.org</u> STEM = Science, Technology, Engineering & Mathematics

What is the *First2* Network? A network of entities throughout West Virginia working together to increase the number of students who graduate with STEM majors. ("*First2*" = first two years of college)

<u>Goal</u> – Increase the number of <u>first-generation</u> and other <u>underrepresented students</u> who graduate with STEM degrees in West Virginia.

<u>Aim</u> – Double percentage of STEM students who graduate with STEM degrees.

<u>Target</u> – WV first-generation students and underrepresented students in STEM; K through first 2 years of college.

Funding - In September 2018, *First2* received a National Science Foundation (NSF) INCLUDES Alliance award of \$7.15 million for the next five years.

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Supplementing STEM Career Mentoring Through Biweekly Opportunity Emails

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- We thank the faculty and staff who sent opportunities to us for listing in the emails.







Introduction

- First-generation/underrepresented students at large universities struggle to receive individualized support.
- Lack of support = decreased sense of belonging.

Is there a way to bridge this support gap?



Biweekly Opportunity Emails

- Opportunities gathered from colleges, government ads, etc. compiled into <u>one place</u>.
- Hyperlinks, highlighted dates = greater skim-ability.
- Three categories of information
 - New Opportunities
 - WVU-based (Institutional) Opportunities
 - External Opportunities



Plan-Do-Study-Act Cycle

For this project, we followed the PDSA Cycle:

- P: Identify area for improvement.
- D: Carry out change idea.
- S: Analyze data.
- A: Adopt, adapt, or abandon.



Plan

- Inclusion criteria:
 - Fall 2022 to Fall 2024 (*n*≈100)
 - First2 Network-funded students (past and present)
 - Spring 2025 (*n*≈3000)
 - Freshman, sophomore, and juniors
 - STEM
 - Underrepresented (first-generation, rural resident, PELL, etc.)



Do

- From Fall 2022 to Spring 2025, we sent biweekly opportunity emails containing career and academic resources.
- In Spring 2025, we transitioned from plain-text to Mailchimp (colorful, branded) emails.
- At the end of each Fall semester, a voluntary survey for feedback was sent to recipients.



Sample Email



https://mailchi.mp/dfdb3cd8084b/biweekly-opportunities-for-stem-majors-12713992



Study: Research Questions

- 1. Do underrepresented students who receive the opportunity emails (recipients) use the emails (open, read/skim, act on)?
- 2. Do recipients perceive better outcomes related to STEM, and improved ability to identify enhancing activities (e.g., resources, engage in career planning, increase involvement, and find opportunities)?
- 3. Do recipients feel increased belongingness on campus or within their major when receiving biweekly opportunity emails?



Study: Data Collection

- Qualtrics survey with three and five-point Likert scales.
- 79% of respondents read the emails (8-12 per semester)
- Respondents found info of interest 4 times and acted on it 1.7 times per semester
- Positive impact on engaging and connecting students
- Across 10 belongingness Likert scale questions, mean response was never below 4.2 (out of 5) with 4.4 as *Overall Belonging in STEM*.



Act

- Students felt increased sense of belonging after receiving Listserv emails.
- Small incremental, low-stakes institutional changes can be straightforward and cost-effective, and have the potential to improve students' connection and belonging to STEM.

We recommend adopting this idea under the adapted third-party email format.



"The opportunities in these emails are great for any STEM student looking to get the most out of their degree."

> "I go through them each time and have actually found multiple programs through these emails!"

You can do it, too!

"Even if I didn't always read over them in depth, it is helpful to have consistent emails they keep me focused on the future and prioritize experiences outside of academics."

"I probably would not be aware of the opportunities mentioned in the emails if they weren't sent out."



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Study: Data Analysis Tables

Mean student responses (fall 2022, fall 2023, and fall 2024) for Likert statements related to the biweekly opportunity emails. Three-point Likert scale (Agree = 3, Neither Agree nor Disagree = 2, and Disagree = 1).

Likert Statement	Mean Response (n = 30)
The biweekly emails helped to connect with other First2 participants at WVU.	2.2
The biweekly emails helped to connect me to the First2 Institutional Team (faculty, staff, and student directors/co-chairs).	2.4
The biweekly emails helped me identify resources necessary for my success in college.	2.7
The biweekly emails encouraged me to engage in career planning.	2.6
The biweekly emails helped me to understand ways to be more involved with the campus community.	2.7
The biweekly emails assisted me in finding opportunities to enhance my education outside of structured classes.	2.6
The biweekly emails made me more positive toward majoring in STEM.	2.6



Study: Data Analysis Tables

Mean student responses (fall 2022, fall 2023, and fall 2024) for Likert statements related to the *Belonging in the STEM Community*. Five-point Likert scale (Strongly Agree = 5, Neither Agree nor Disagree = 3, and Disagree = 1).

Likert Statement	Mean Response (n = 30)
1: I feel accepted in my campus's STEM community.	4.6
2: I feel I fit in with my campus's STEM community.	4.6
3: I feel comfortable in my campus's STEM community.	4.5
4: I feel respected in my campus's STEM community.	4.4
5: I feel a sense of belonging in my campus's STEM community.	4.3
Sub-total (Belonging in STEM Community)	22.4



Study: Data Analysis Tables

Mean student responses (fall 2022, fall 2023, and fall 2024) for Likert statements related to the *Belonging in Science/Mathematics Classes*. Five-point Likert scale (Strongly Agree = 5, Neither Agree nor Disagree = 3, and Disagree = 1).

Likert Statement	Mean Response (n = 30)
6: I feel I fit in when I am in science and mathematics classes.	4.3
7: I feel respected when I am in science and mathematics classes.	4.5 (<i>n</i> = 29)
8: I feel a sense of belonging when I am in science or mathematics classes.	4.3
9: I feel accepted when I am in science or mathematics classes.	4.4 (<i>n</i> = 29)
10: I feel comfortable in science or mathematics classes.	4.2
Sub-total (Belonging in Science/Mathematics Classes)	21.8 (<i>n</i> = 29)

WestVirginiaUniversity.My experience with the biweekly emails has positively influencedWestVirginiaUniversity.my sense of acceptance and belonging at college (avg. 4.2 of 5, n = 30).