Capstone Project – Retention of Transgender and Gender Non-Conforming Undergraduates in Science, Technology, Engineering, and Math

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Abstract

This paper represents the culmination of research on issues that affect the retention of transgender and gender non-conforming (TGNC) undergraduate students in science, technology, engineering, and mathematics (STEM). A proposal for two action items that Northeastern University can implement through the LGBTQA Resource Center is included and grounded in a theoretical framework utilizing validation theory and marginality and mattering theory. This includes an accessible, single source resource guide for TGNC STEM students on campus–that is adaptable for the entire Northeastern University undergraduate campus network–as well as a mentor program focused on creating and fostering a supportive and vibrant TGNC STEM student community. Tables are included with details on the population model and budgetary considerations. Initial program materials are included in several appendices.

Keywords: transgender, gender nonconforming, TGNC, STEM, undergraduate retention, mentor program, validation theory, marginality and mattering theory, Northeastern University

Summary of Issue

Retention rates for transgender and gender non-conforming (TGNC) undergraduate students in science, technology, engineering, and mathematics (STEM) are approximately 10% lower than that of their cisgender peer students (Maloy et al., 2022). Most research has been conducted on understanding the female experience in STEM fields. Research on the LGBTQA experience, specifically on TGNC experiences, is an emerging and contemporary field of research.

There is significant data proving lower retention rates for TGNC students who are enrolled in STEM programs, and understanding the root cause of this lower retention rate requires more thorough research. Initial findings suggest that TGNC undergraduate STEM students experience extensive discrimination, harassment, and mental health challenges: TGNC STEM students have reported bullying, microaggressions, unfavorable campus climates, and trouble locating peer groups that provide support (Maloy et al., 2022). Although 71% of all students say they struggle with mental health issues, these issues are higher among TGNC students – being around 90% (Alonso, 2023). These reasons can cause this student population to withdraw or transfer to another institution.

Retention rates of TGNC students further affect the diversity of STEM fields; if TGNC students are not remaining in a program to receive their degree, they therefore do not enter the workforce in a STEM field. It is estimated that that LGBTQ+ people are 17–21% less represented in STEM fields than expected. Specifically in higher education, 69% of queer faculty in STEM fields report that their departments are uncomfortable places to work (Freeman, 2018). The higher education space needs to adapt their priorities to align with the health, safety, and

well-being of TGNC students to increase retention rates and create welcoming spaces for LGBTQA students and faculty alike.

History of the Issue

Transgender and gender non-conforming students have been around since the Stonewall riots in the 1970's and before; their identification in higher education institutions has been an ongoing battle since. Sanlo offered a suggested approach to study the lives, experiences, and perseverance through graduation of lesbian, gay, and bisexual college students in 2004. Students who identify as transgender are not included in the group unless they also identify as a sexual minority. Before Sanlo's article, no other articles had been published on TGNC students and their experiences. To date, no research has been done on LGBTQA students' retention or experience during their college career (Legg, et al. 2020).

Intersectionality plays a large role in the lives of LGBTQA individuals and their history. Intersectionality is defined as "the interconnected nature of social categorizations such as race, class, and gender as they apply to a given individual or group, regarded as creating overlapping and interdependent systems of discrimination or disadvantage." Intersectionality also refers to the variety of the LGBTQA community, which includes the inclusion of persons who are bisexual, lesbian, people of color, transgender, gender nonconforming, and disabled members of the community (Bardio & Brown, n.d.). Innovations in study conception, consultation methods, and comprehension of the implications for preservation action have resulted from work on LGBTQA heritage from all angles. As a result, it offers fresh methods for exposing the variety and many voices that underlie any seemingly homogenous group of people (Graves & Dubrow, 2019).

In the United States, at least 1.4 million persons self-identify as TGNC; a greater proportion of college students are identifying as TGNC, including those who want to study in STEM subjects when they first enroll in school (Maloy et al., 2022). In comparison to their classmates, LGBTQA students suffer higher levels of marginalization, devaluation, and health and wellness difficulties. Research shows these health and wellness disparities are partially explained by LGBTQA students' experiences of marginalization and devaluation in their STEM programs (Cech & Rothwell, 2018). On top of these disparities, STEM courses are designed to be competitive, making the courses and navigating college life difficult for these students (Paris, 2023).

Research has shown the disadvantages cisgender women and members of disadvantaged racial and ethnic groups experience in STEM fields; more recent research is beginning to show inequalities related to sexual orientation and gender identity. For instance, while being more likely to participate in undergraduate research - a feature believed to increase retention in STEM - LGBTQA students are 7% less likely to stay in a STEM major after four years. Also, it is believed that TGNC students are more prone to transition from STEM to non-STEM disciplines (Maloy et al., 2022).

Institutional Background

Northeastern University is a private, not-for profit institution (IPEDS, 2021). The University has three undergraduate campuses with the main campus located in Boston, Massachusetts. Two other campuses are located in Oakland, California and London, United Kingdom. The Boston campus has nine colleges which students may be affiliated with according to their major, with more than 90 majors and concentrations to choose from. Northeastern is an R1 level research institution with $180.2M in external research funding. Northeastern says their

undergraduate goal is to “graduate students who have developed intellectual skills and abilities that prepare then to become self-directed learners, to continue learning in work-based environments, and to be able to transition to new jobs and even new careers throughout their professional lives” (Northeastern University, 2021a).

Northeastern University archives contains information on Northeastern’s first LGBTQA student group. The group didn't form until 1986 after the Stonewall Riots when many other schools in the area began creating safe spaces for their LGBTQA students. It has changed its name many times from “NU Alternative Lifestyles” around 1989, to “NUBiLaGA” in 1991, and finally to “NU Pride” around 2010. Students involved in the group hosted numerous dance parties and drag shows as well as acted as a resource and advocate for the community. The group had participated in campus activism including Day of Silence activities, AIDS awareness programming, endorsement of the Gender-Neutral Housing proposal, and submitting the original proposal for the LGBTQA Resource Center (Bardio & Brown, n.d.).

The LGBTQA Resource Center was first established on campus in 2011 as part of campus activities, then in 2013 the resource center was transitioned to be a part of residential, cultural and spiritual life (Northeastern University, 2021b). The LGBTQA Resource Center is located in the Curry Student Center. The center is the home base for most of the affinity groups on campus including NU Pride, Afro Spectrum, Aspace, Transgender and gender non-conforming identities and oSTEM. oSTEM - Out in Science, Technology, Engineering, and Mathematics–is for members of the LGBTQA community who are also STEM majors.

Proposal to Support TGNC STEM Students

This proposal contains two recommendations that include a resource guide and a mentor program. Budget implications, an assessment plan, and legal considerations are included with the

proposal. The theoretical framework at the heart of this proposal is explored in detail. Additionally, deliverables and additional information are included in the appendices.

Theoretical Framework

In examining student retention, the Model of Student Departure outlines three reasons that students might leave an institution or the higher education space entirely: (1) academic difficulties, (2) challenges with resolving occupational and educational goals, and (3) inability to incorporate into life, both social and intellectual, at an institution. Therefore, retention only occurs when students integrate into formal and informal academic systems, and formal and informal social systems (Tinto, 1993). To assist in understanding how to successfully engage students in meaningful ways across campus to increase their retention, two key theories form the basis of our proposal: validation theory and marginality and mattering theory.

Centered on the idea that validation is not something a student creates for themselves but rather when someone takes an active role in assisting them, validation theory contains six elements: (1) validation enables, confirms, and supports academic and interpersonal development, (2) validation allows students to feel capable of learning because of increased self-worth, (3) validation is a prerequisite for student development, (4) validation can occur in and out of classroom spaces, (5) validation is not an end goal, it is a continuing process of development, and (6) validation is most effective when introduced to a student's experience early–specifically in the first weeks of the first year of college (Rendón, 1994; Rendón & Muñoz, 2011).

Validation theory is particularly relevant for culturally diverse or nontraditional students. Students from such backgrounds expressed larger concerns over success in a collegiate environment and are more likely to require assistance in navigating an institution; furthermore,

involvement on campus can often be more difficult for these students and validation can increase a student's involvement on campus. Such students perceive "involvement" not when they take initiative on campus, but when someone takes an active role in assisting them. Validation therefore must come from external agents, both in and out of classroom spaces, in order to create a feeling of confidence for students that assists in self-actualization. This involves members across the campus community–faculty, administrators, coaches, other students–reaching out and facilitating activities that promote active learning and interpersonal growth (Rendón, 1994).

In this way, validation can be said to have two types - academic and interpersonal – and can be engaged in four ways: two directly relate to faculty training and two outline models of classroom and community values (Rendón, & Muñoz, 2011). To create a validating classroom, students should be encouraged to have a public voice and share ideas openly and in teams; validated in their early years as well as throughout their college careers; and given opportunities for reflection that allows multiple perspectives and imperfection. To create a therapeutic learning community, institutions must promote pride across all cultures, including gender and sexual orientation through sponsored activities; this should be recognized and fostered in and out of the classroom by faculty and staff in areas and events across campus. Students should also be encouraged to help each other, both through individual connections and through institutional programs (Rendón, 1994).

Where validation gives students self-confidence to succeed, mattering gives students a feeling of belonging and being relied on, important, and dependable. Marginality and mattering exist at two ends of a sliding scale. Marginality can be temporary. Every time someone engages in change, in roles or other life transitions, they face the potential of feeling marginalized. It can also be permanent, as often seen in cases of cultural differences or even in systems of oppression.

Ultimately, everyone experiences being marginal at times–perhaps most universally as a first-year student on a college campus (Schlossberg, 1989).

To combat the experience of marginality, higher education turns to engaging in a process of mattering. Mattering has five notable aspects, (1) attention: feeling noticed, (2) importance: the belief that one's wants and needs are cared about and considered by others, (3) ego extension: feeling like others take pride in one's success and share in one's failures, (4) dependence: feeling that a person can depend on someone else, and (5) appreciation: feeling that one's efforts are appreciated by others (Schlossberg, 1989).

The intersection of validation theory and marginality and mattering theory creates a view of student involvement from two angles: external validation that becomes internal motivation, and external acceptance and encouragement that creates an internal feeling of belonging. Validation and mattering are key in student involvement for nontraditional students (Rendón, 1994; Rendón & Muñoz, 2011; Schlossberg, 1989). Since integration and involvement in academic and social spaces are keys to student retention (Tinto, 1993), institutions therefore must take action to create spaces that engage in validation of students and to create a feeling of mattering in students.

Resource Guide

The goal of the Resource Guide is to have as many TGNC STEM related resources available in one convenient location. The resource guide assists in the validation and mattering of TGNC students by showing a variety of engagement opportunities on campus and resources, both on campus and locally, that can enable them to thrive and feel like they belong and matter to the community. The resource guide portion of this proposal includes information specific to Northeastern University, and other general information that can be helpful for TGNC STEM

undergraduate students. Although this resource packet was created specifically this population of undergraduate students, many of the documents can be leveraged by all LGBTQA students, faculty, and staff. It was thoughtfully created with the understanding that many of our campuses can customize the guide to their specific location.

This resource guide will be available as a soft copy that can be posted on any Northeastern University website. This resource guide was created in Canva, and the link and editing access will be shared with the NU LGBTQA Resource Center contact who will be responsible for maintaining the information. See Appendix A for the resource guide with clickable links. A QR code can be created to use on posters, flyers, websites, social media, and for creating stickers, which will allow quick access to the resource guide; an optional QR code generator membership is included in the budgetary implications section of this paper; free options are available, though they do not offer any data analytics. See Appendix A for the QR code example.

Resource Guide Assessment

At the end of the academic year, an assessment survey will be sent to the email distribution list that the NU LGBTQA Resource Center manages, asking participants to complete the survey regarding the resource guide. The assessment survey is located in Appendix B.

The assessment survey should be sent to the entire distribution list, whether they accessed the resource guide or not. The data collected from these surveys will be used to assess and adjust the resource guide as needed. The first question will ask if they accessed the resource guide, and if not, why. This will provide data to understand any changes that need to be made to the resource guide so more users will leverage it. If they did access the resource guide, there is a

series of questions to gather and analyze data to make improvements and understand the needs of the users.

Additional data on the success of this resource can be gathered from the web host of the site the guide is posted on. Many web platforms can track how often a particular site is shared, a link is accessed, or a file is downloaded. This metric will show how useful this resource may or may not be. Similar data can be collected from the QR generator; a paid membership to QR.io allows members to create unlimited QR codes and analyze scan statistics (QR.io, 2023).

Mentor Program

The first goal of the mentor program is to align with NU's academic plan, Experience Unleashed, specifically with these pillars and areas noted in the plan that reference diversity and inclusiveness: "a profound sense of belonging across all our campuses", "a diverse and inclusive community of students, faculty, and staff, with our many global partners and in the neighborhoods that surround our campuses", "Build on the power of diversity", "Develop an academic community that reflects the diversity of our surrounding society and completely embraces and leverages that diversity in all its forms for an equitable and inclusive university", and "Our diversity is reflected in our different social identities, including race, gender, sexual orientation" (Northeastern University, 2022).

The second goal is to support the student mentees by helping them build skills and have meaningful conversations, and to allow for professional development opportunities for faculty and staff mentors – all in a safe and supportive space. Furthermore, by engaging in establishing relationships across students, faculty, and staff in and out of the classroom, this program is rooted in validating students and fostering a sense of community, belonging, and mattering.

Roles and responsibilities of mentors and general staff meeting structures and trainings are included in Appendix C. Mentor and mentee applications are included in Appendix D.

Mentor Program Assessment

Mentors and mentees will receive respective surveys to assess the impact of the mentor program. The first survey will be sent mid-year. The intent of this survey is to understand the impact and satisfaction of the first half of the year, identify trends, and make changes for the second half of the year. At the end of the year, a different survey will be sent to all participants. The data collected from these surveys will be used to assess and adjust the mentor program based on feedback collected in the survey responses. A designated person who works in the NU LGBTQA Resource Center will be provided the Qualtrics access so they can make adjustments as needed, after the data has been analyzed. The links for these assessment surveys can be found in Appendix B.

Creating and executing this mentor program should have a positive impact on the university's community members that choose to participate, and the university's diversity goals. Offering a mentor program will relate to "the legacy of research on student development theory and college student adjustment and transition" (Fernández et al., 2018). A SWOT analysis should be conducted each academic year for both the program and its resources. A template is included in Appendix E.

The mentor and mentee applications and the mid-program and program conclusion surveys were created using Northeastern University's Qualtrics site. Inspiration for these applications and surveys came from several institutions and LGBTQA organizations' mentor and mentee applications.

These surveys will allow NU to evaluate the effectiveness of the mentor program and determine the future state of the program. The information gathered through the applications and surveys should be kept in strict confidence and not distributed outside the NU LGBTQA Resource Center. The links and editing access will be shared with the NU LGBTQA Resource Center contact who will be responsible for maintaining the applications. Qualtrics has robust reporting and data analysis capabilities. See Appendix D for the links for the applications and Appendix B for the assessment surveys.

Further data can be collected on attendance to major events hosted by the LGBTQA Resource Center. According to the center, oSTEM weekly meetings have 5-10 students, and 10-15 for larger events (K. Vetiac, personal communication, February 23, 2023). If the mentor program is considered successful, attendance should increase to these events; therefore, tracking attendance is also critical to assess the success of this program.

Budgetary Implications

In estimating the budget for this proposal, an estimate of the population must first be considered. Data related to TGNC populations at Northeastern is difficult to come by, as it is not reported as a part of the Integrated Postsecondary Education Data System (IPEDS) nor on Northeastern's websites. To accomplish this estimation, several data points were utilized across multiple studies and sources. See Tables 1.1, 1.2, 2.1, and 2.2 for more information on this process. This proposal estimates that at Northeastern University, the undergraduate population includes around 209 TGNC students, with 113 specifically in STEM fields.

To create a strong program in support of students who will take on the mentor role, salaries and pay rates should be established. In this initial proposal, a pilot program of five mentors (5) with five mentees each (5) is suggested, with room for future growth.

In addition to the cost of salaries, other items like food, supplies, and a discretionary budget should be considered. This puts the total cost of this program at $10,967 annually. To fund this program, assistance should be requested of the STEM colleges. Two options for requesting funding exist: the program can be split equally between the four colleges, or each college could contribute funds per student–which currently rests at $96. See Tables 3.1 and 3.2 for further breakdown of these costs. These numbers are subject to change based on the number of mentors working and the number of mentees interested in the program.

Additional funding sources can be considered for this program can be gathered through university grants or external funding. As an example, MassBay Community College operates a STEM mentor program that connects students with professionals in the field. It has corporate sponsorships from a variety of partners, including Sanofi, ABI-LAB, MathWorks, and STEM Starter Academy (MassBay Community College, 2023). If this proposal is of interest to faculty on campus, colleges offer grant funding as well. In the College of Social Sciences and Humanities (CSSH), there exists a Multigenerational Research Grant; the goal of this grant is to engage and support the "development of multi-generational research teams that engage faculty, graduate and undergraduate students to advance faculty research" (CSSH, 2020).

Legal Considerations

Since the resource center was transitioned to be a part of residential, cultural and spiritual life (Northeastern University, 2021b), this makes any employee–faculty, staff and student employees–a "responsible employee" who is required to report allegations of sex and gender-based discrimination, including sexual misconduct, to the Title IX Coordinator (Northeastern University, 2023).

Since TGNC undergraduate STEM students experience extensive discrimination, harassment, and mental health challenges (Alonso, 2023; Maloy et al., 2022) and 69% of queer faculty in STEM fields report that their departments are uncomfortable places to work (Freeman, 2018), it is likely that mentees in the program will describe or share experiences that require reporting.

To assist in this process, OPEN–the Office of Prevention and Education at Northeastern–offers interactive and informative customized presentations for classes, student organizations, athletic teams, fraternities and sororities, first-year seminars, classes, staff and faculty (OPEN, 2023b). Online modules exist as an accompanying resource and cover a variety of topics including alcohol and drug abuse, sexual violence prevention, bystander trainings, preventing sexual violence as a student leader, trauma-informed response to disclosures of sexual violence, sexual health, as well as other student concerns–like resiliency and creating new and lasting friendships on campus (OPEN, 2023a).

Student Concerns and Considerations

Since this is a student facing program, some consideration to student concerns must be given. LGBTQA students have many considerations when deciding on which institutions to apply to and ultimately attend. Such students often consider what kinds of services are available to them on campus, gender-neutral housing options, and inclusivity are just a few of such considerations (Hoover, 2022). Once a student is on campus, it is up to the institution to deliver on the promises of these resources in order to retain such students. This proposal seeks to do just that by offering clear outlines of available resources–to be updated frequently–and in creating a sense of belonging and togetherness on campus.

In the development of this proposal, strong consideration was also given to the privacy and safety of students. Data collected in the surveys and applications for the mentor program are to remain confidential within the resource center; if data is used from these surveys, they are to be completely anonymized–with exceptions where a report requiring the intervention of the Title IX office occurs. For this reason, additional training and guidance to mentors is to be included in staff meetings and other events on ensuring the safety of mentees, particularly in protecting the identity of students if they are not publicly out.

Though a majority of the budgetary and legal considerations of this proposal pertain to the mentor program, the impact of the resource guide cannot be understated. With the use of QR codes, this guide can be publicized across campus, including on the doors and in office spaces of faculty and staff. In a survey of 30,000 college graduates conducted by Gallop and Purdue in 2014, students who engaged and formed meaningful relationships with faculty were twice as likely as their peers to feel included on campus and reported a higher level of well-being (Mintz, 2023). This can begin with creating a space that students feel noticed, one of the elements of mattering theory.

Conclusion

This proposal seeks to address retention of TGNC STEM students through the implementation of a mentor program and the compilation of a singular, comprehensive resource guide. Retention rates of TGNC STEM undergraduates must be addressed, and having resources such as the Resource Guide and Mentor Program can help increase retention for this student population, if updated as needed and managed appropriately. The students' biggest needs are feeling valued and having a sense of belonging. Creating a feeling of belonging directly correlates with emotional well-being (Adams, 2015). This proposal helps address these needs. If

this proposal is accepted, all access and editor rights will be transferred to either a specific person(s) identified to manage the Resource Guide and the Mentor Program. Alternatively, access and editor rights will be transferred to Kevin Vetiac, Director, LGBTQA Resource Center.

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Table 1.1

Northeastern University Undergraduate Student Population by College

College	Students			
	In Classes	Co-op	Subtotal	%
College of Arts, Media, and Design	1217	297	1514	6.78%
Bouvé College of Health Sciences	1911	223	2134	9.56%
D'Amore-McKim School of Business	3449	1000	4449	19.94%
College of Engineering	2879	1079	3958	17.74%
College of Professional Studies	1468	8	1476	6.61%
Khoury College of Computer Sciences	2304	634	2938	13.17%
College of Science	2646	728	3374	15.12%
College of Social Science and Humanities	1498	362	1860	8.34%
University Programs	610	1	611	2.74%
Total	17982	4332	22314	100.00%
STEM[a]	9740	2664	12404	55.59%

Note. Data used here is reported in *Facts and Figures* annually (Northeastern University, 2021a); however, there are no undergraduate students in the School of Law so this line was removed for brevity.

[a] The STEM line of this table includes a summation of lines related to STEM fields; in particular, this includes numbers from the Bouvé College of Health Sciences, the College of Engineering, the Khoury College of Computer Sciences, and the College of Science. This analysis is incomplete, as Northeastern University operates several interdisciplinary programs across colleges; these numbers are therefore just a best estimation of student populations.

Table 1.2

Northeastern University Undergraduate Student Population by Gender and Race/Ethnicity

Race/Ethnicity	Gender			Subtotal	% O/U
	F	M	O/U		
International	1,571	1,630	2	3,203	0.06%
Hispanic or Latino	1,367	1,001	2	2,370	0.08%
American Indian or Alaska Native	6	6	0	12	0.00%
Asian	2,181	1,650	2	3,833	0.05%
Black or African American	915	430	0	1,345	0.00%
Native Hawaiian or Pacific Islander	2	1	0	3	0.00%
White	5,020	4,738	20	9,778	0.20%
Two or more races	737	564	2	1,303	0.15%
Race and ethnicity unknown	231	233	3	467	0.64%
Total	12,030	10,253	31	22,314	0.14%

Note. Data used here is reported in *Facts and Figures* annually (Northeastern University, 2021a) and does not include the % O/U column. O/U stands for "Other or Unknown" when students declined to report their gender. % O/U represents a calculation of the percentage of O/U population within each race/ethnicity category.

Table 2.1

Estimating TGNC Populations by Model

Model	T		GNC		TGNC	
	n	%	*n*	%	*n*	%
Meerwijk & Sevelius (2017)[a]		0.39%				
Williams Institute (2016)[b]					1397150	0.58%
Williams Institute (2022)	995200	0.37%	341800	0.13%	1337000	0.50%
Census Bureau (2021)		0.6%		1.7%		
Northeastern University (2021)[c]			31	0.14%		
Proposal Model[d]	112	0.50%	90	0.40%	202	0.91%

Note. This table represents a collection of different estimates of transgender and gender nonconforming (TGNC) populations in the United States. *n* represents the estimated number, when given. Meerwijk & Sevelius (2017) and the Williams Institute (2016; 2017) represent analysis of multiple models using different methodology to estimate the transgender population. Census data (Anderson et al.) comes from a 2021 Household Pulse Survey (HPS) and data pooled over the period of July 21 to September 13; the HPS asks questions about sex at birth, current gender identity, and sexual orientation, and information listed here represents the bureau's analysis of answers to those three questions.

[a] A total number was not given in this study; instead, it reported 390 per 100,000 individuals in the US as transgender.

[b] The Williams Institute (2016) report did not differentiate between transgender and gender nonconforming groups.

[c] Data from Northeastern reflects only respondents who declined to provide a gender on a binary scale. It is likely that this number is incorrect. Furthermore, the data did not differentiate between transgender and cisgender for questions related to gender.

[d] Using the information gathered from these external sources and government data, this is our initial estimate as to the TGNC population at Northeastern. This does not account for differences in region and culture, nor does it consider that not every TGNC person is out and willing to indicate their gender in such surveys.

Table 2.2

Northeastern TGNC Undergraduate Student Population by College

College	*N*	T		GNC		TGNC	
		n	%	*n*	%	*n*	%
College of Arts, Media, and Design	1514	8	0.53%	7	0.46%	15	0.99%
Bouvé College of Health Sciences	2134	11	0.52%	9	0.42%	20	0.94%
D'Amore-McKim School of Business	4449	23	0.52%	18	0.40%	41	0.92%
College of Engineering	3958	20	0.51%	16	0.40%	36	0.91%
College of Professional Studies	1476	8	0.54%	6	0.41%	14	0.95%
Khoury College of Computer Sciences	2938	15	0.51%	12	0.41%	27	0.92%
College of Science	3374	17	0.50%	14	0.41%	31	0.92%
College of Social Science and Humanities	1860	10	0.54%	8	0.43%	18	0.97%
University Programs	611	4	0.65%	3	0.49%	7	1.15%
Total	22314	116	0.52%	93	0.42%	209	0.94%
STEM[a]	12404	63	0.51%	51	0.41%	114	0.92%

Note. Data used here in column *N* is reported in *Facts and Figures* annually (Northeastern University, 2021a). Columns *n* are calculated by using the proposed model from Table 2.1 and multiplying each percentage by column *N,* rounding up to a whole number. The percentage is *n*/*N*. Since this method involves rounding up to a whole number, the result is therefore slightly higher than predicted in Table 2.1. This model also does not account for differences between fields in that it does not consider if some fields of study have a higher or lower than average population of TGNC students; it applies the same percentage calculation across all colleges.

[a] The STEM line of this table includes a summation of lines related to STEM fields; in particular, this includes numbers from the Bouvé College of Health Sciences, the College of Engineering, the Khoury College of Computer Sciences, and the College of Science.

Table 3.1

Annual Operating Costs of the Peer Mentor Program

Budget Item	Amount	Frequency
	Paying Peer Mentors	
Billable Hours		
Staff Meeting	2	month
Event Attendance	2	month
Mentee Meetings	10	month
Total Billable Hours	14	month
Mentor Pay		
Minimum Wage	$15	hour
Monthly Wage	$210	month
Annual Mentor Salary	$1,680	year
Subtotal	$8,400	year
	Additional Costs	
Food for Staff Meetings	$90	month
QR.io QR Generator Membership	$350	year
Supplies	$500	year
Subtotal	$1570	year
Discretionary (10%)	$997	year
Total Annual Operating Cost	$10,967	year

Note. This proposal considers a pilot of five mentors (5) with five mentees each (5). Each mentee meeting is allocated two (2) hours each. It is possible that each month could be lower or higher

than fourteen (14) billable hours, so this is just an estimate. A 10% discretionary fund can be used to make up for any potential differences in hours, supplies, food, or other unexpected costs. Here, a year consists of eight (8) months, four (4) in each Fall and Spring semester.

Table 3.2

Potential Funding Proposal for Northeastern University

Demographic	Equal	Equitable		
		N	TGNC	Fee
Bouvé College of Health Sciences	$2,742	2134	20	$1,924
College of Engineering	$2,742	3958	36	$3,463
Khoury College of Computer Sciences	$2,742	2938	27	$2,597
College of Science	$2,742	3374	31	$2,982
STEM Overall	$10,967	12404	114	$10,967

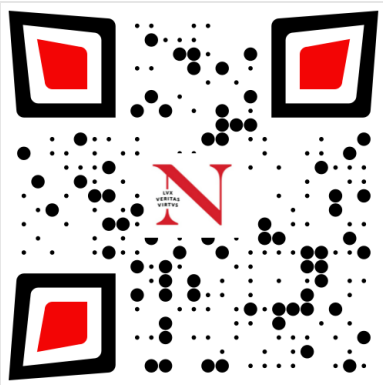
Note. Data used here in column *N* is reported in *Facts and Figures* annually (Northeastern University, 2021a). TGNC is calculated in Table 2.2. The overall cost of the program as modeled in Table 3.2 is $10,967. "Equal" denotes this cost divided by the number of STEM colleges (4). "Equitable" denotes this cost divided by total number of TGNC students; the price per student ($96) is then multiplied by TGNC to determine the cost by college. The numbers here are not actual, as it is estimated using a model. Once mentors and mentees have been assigned and chosen, this fee should then be applied. Not modeled here: this fee could potentially go down to the department level within each college, as they often manage budgets separately.

Appendix A

Resource Guide and Coordinating QR Code

This Resource Guide was created in Canva and can be adjusted to add or remove any resources and/or links. All access to the document including editing access will be provided to the identified person(s) or to the Director of the NU LGBTQA Resource Center. The complete packet can be found on the next several pages.

This QR code below links directly to the TRANS@NU link from the NU LGBTQA Resource Center webpage. If the proposal is accepted, and the resource guide is added to the Resource Center webpage, this QR code can be updated to the new link on the webpage which will then bring the user directly to the Resource Guide that was created (see Appendix A). Additionally, this QR code was created using the free version. The paid version has a minimal monthly fee, which was included in the budgetary concerns section of this research paper, and allows for tracking of certain data such as tracking number of scans.



Northeastern University Resource Guide for TGNC STEM Undergraduate Students

Updated: February 23, 2023

Helpful Links

NU LGBTQA Resource Center

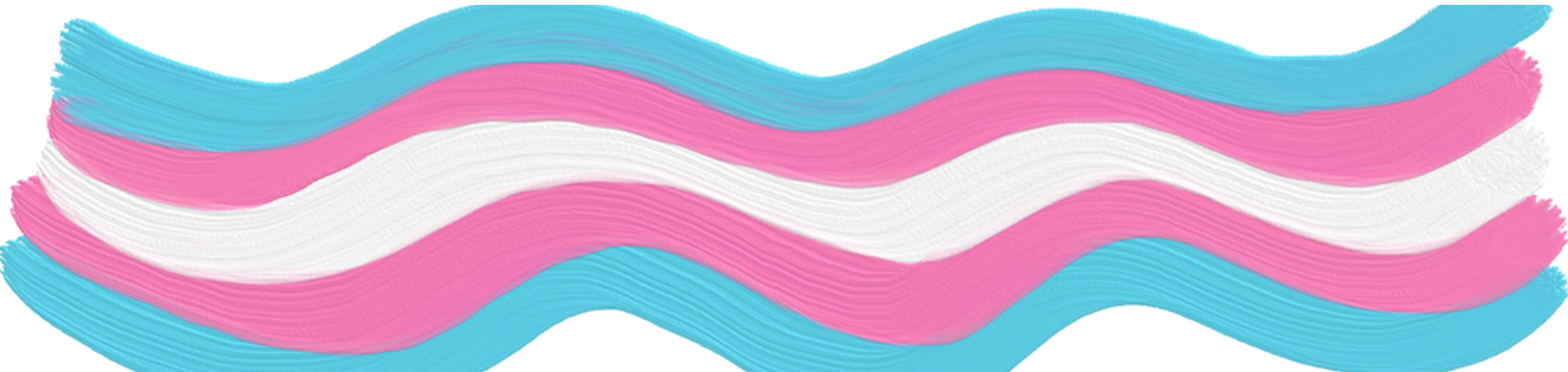
Trans@NU information
- NU map of gender-neutral bathrooms
- Info on NU all gender campus housing
- Name and gender marker – preferred and legal name changes
- Rainbow Graduation
- NU Queer Orientation
- OUTober
- Reach(OUT) LGBTQA+ Career Conference
- Sign up here for their monthly newsletter and weekly events digest

OWAM (One Wednesday A Month) for queer and trans NU students

Student Organizations and Affinity Groups

We Care – Student Life

NU University Health and Counseling Services
- Anywhere on the Rainbow – an LGBTQIA2S+ Support Group
- Additional services (Boston area and National)



Helpful Links

NU Policies:

- Policy #104: Policy on Sexual and Gender-Based Harassment and Title IX
- Policy #427: Policy on Use of Chosen Name
- Policy #800: Policy on All Gender Housing

Trans Lifeline

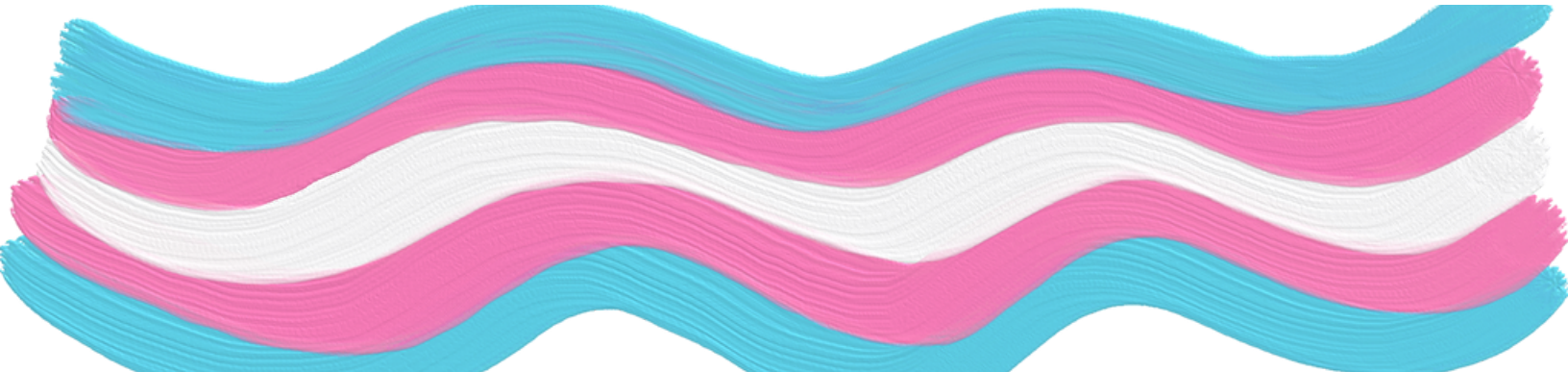
The Trevor Project

Boston Area Trans Supports (BATS)

Trans Care Site and MA Trans Support Groups

Grant and scholarship opportunities for TGNC STEM Students:

- 10 STEM Scholarships for LGBTQ+ Students
- NOGLSTP Out to Innovate™ Scholarship for LGBTQ+ Students in STEM
- LGBTQ+ STEM Scholarship from Study.com
- OUT to Innovate STEM Scholarships
- Pride in Diversity STEM Scholarship
- Biggest Scholarships for LGBTQ Students
- Point Foundation - The LGBTQ Scholarship Fund
- The Pride Foundation Scholarships



Appendix B

Proposal Assessment Surveys

Resource Guide Assessment Survey

Mentor Program Assessment Survey (mid-program evaluation)

Mentor Program Assessment Survey (after program completion)

These surveys can be adjusted to add or remove any questions. All access to the surveys and editing access will be provided to the identified person(s) or to the Director of the NU LGBTQA Resource Center. Qualtrics training is available through the NU IT Help Desk via dedicated Qualtrics experts.

Appendix C

Mentor Program Details

The purpose of the mentor program is to facilitate connection between a first-year student and an older student on campus. The roles and responsibilities of the mentor in the mentor program encompass the following:

- Meet once a month with each mentee
- Attend a monthly staff meeting for 1.5-2 hours
- Attend an event hosted by the LGBTQ Resource Center and personally invite mentees to attend with them

Monthly, meetings should occur between the director or the staff designee of the LGBTQA Resource Center and the mentors in the mentor program. Food should be provided and is allocated in the budget proposal in Table 3.1. Generally, these meetings should cover the following topics and timing outlined below.

- Welcome and Food – 15 minutes
- Announcements or Updates from Resource Center – 15 minutes
- Discussion of Mentees – 30 minutes
    - How are they doing?
    - Any issues that should be discussed?
    - Any action needed by the resource center/university?
- Training – 30-60 minutes

When available, training sessions should be offered for the professional development of the mentors. These trainings can include external and internal trainers. A non-exhaustive list of trainings is suggested below:

- OPEN Training / Title IX
- Interview and Job Preparations
- Project Management
- Trauma Informed Principles
- Event Planning and Coordination

Appendix D

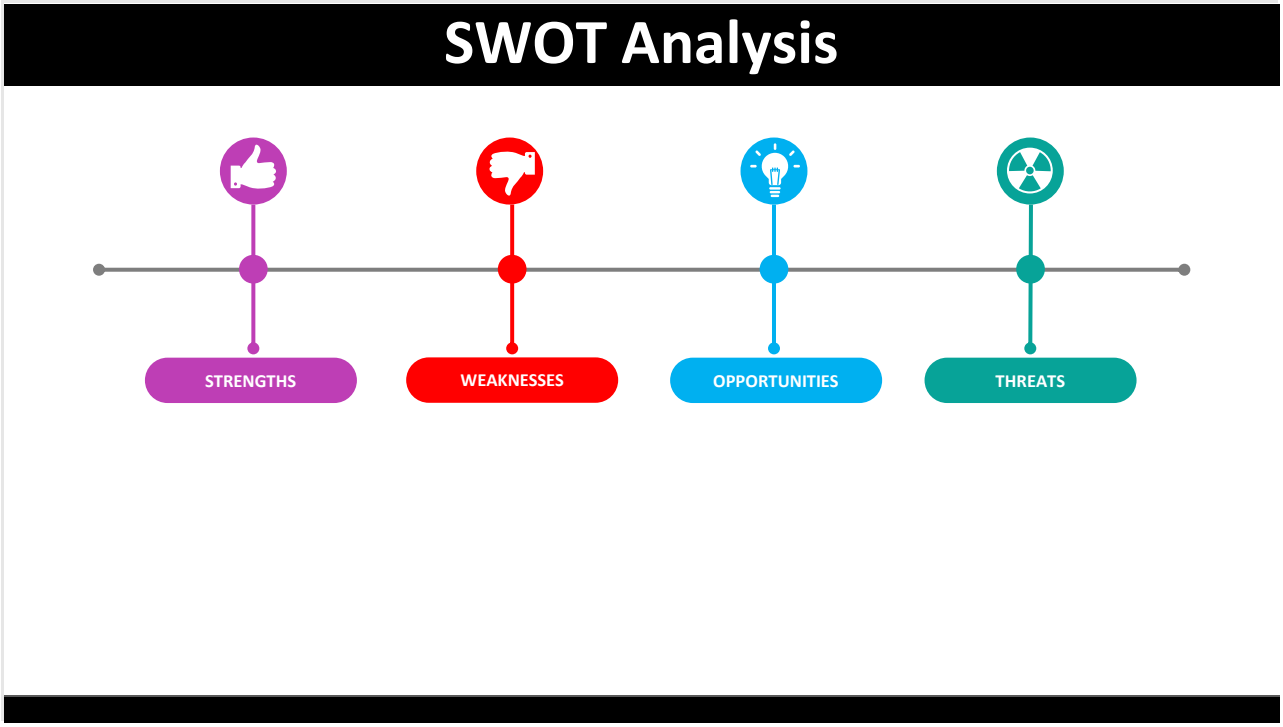
Mentor Program Applications

Mentor Application

Mentee Application

These applications were created in Qualtrics and can be adjusted to add or remove any questions. All access to the applications and editing access will be provided to the identified person(s) or to the Director of the NU LGBTQA Resource Center. Qualtrics training is available through the NU IT Help Desk via dedicated Qualtrics experts.

Appendix E



This SWOT template can be used to complete the annual analysis for both the Resource Guide and the Mentor Program.

Appendix F

The following flyer was created in Canva and can be adjusted to add or remove any resources and/or links. All access to the document including editing access will be provided to the identified person(s) or to the Director of the NU LGBTQA Resource Center.

TGNC STEM Mentor Program

Join the NU TGNC STEM Mentor Program!

What is it?

The program is designed to create and build supportive relationships between TGNC STEM community members, share resources, and help build skills - all in a safe environment.

What to expect:

Intentional pairing between undergraduate TGNC STEM students and TGNC STEM graduate students, faculty, and staff members across campus.

Monthly meetings between the mentor and mentee allow for meaningful discussions.

Our kick-off social and year-end retreat will allow you to meet new people, expand your network, and have fun!

TGNC STEM Mentor Program

Interested in becoming a Mentor? Mentors should:

- Be enrolled as a graduate student at NU, a faculty member at NU, or a staff member at NU
- Be part of the NU community for at least one full academic year
- Be interested in creating & building supportive relationships with TGNC STEM undergraduates
- Be able to commit to the mentor program for at least one full academic year
- Self-identify as a member of the TGNC and STEM communities

Interested in becoming a Mentee? Mentees should:

- Be currently enrolled as an undergraduate at NU
- Be interested in creating & building supportive relationships within the TGNC and STEM communities
- Self-identify as a member of the TGNC and STEM communities
- Be able to commit to the mentor program for at least one full academic year

How do I apply? Click below!

Mentor Application

Mentee Application