Work in Progress: An Investigation of a College of Engineering Underrepresented Minority Students' Perceptions of Inclusive Co-curricular Spaces and Student Support Programs Beyond the First Year.

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Work in Progress - Assessing Campus Climate: Students' perceptions of inclusion beyond the first year

Abstract

Undergraduate programs attempting to increase retention of underrepresented minorities (URM) often focus on the students' experiences within the first year. At large institutions, students may also have access to additional services and programs to help them succeed beyond their first year. However, some students are either unaware of these resources or unwilling to participate. This can be an issue for URM, especially if they are the only one from their small niche in a particular major or class. At Texas A&M University, Black and Hispanic students make up a small demographic within the Colleges of Agriculture and Life Sciences (COALS) and Engineering (COE), approximately 3% and 23% respectively. Lack of peer interactions, compounded by other challenges that URM students face, can lead to feelings of isolation and eventually departure decisions. To overcome this perceived isolation, colleges must develop ways to connect students with student support programs (SSP), as well as encourage utilization of co-curricular spaces (CS) already available, yet under utilized. This work explores factors that promote or deter upper-level URM students from engaging in support programs and other student success opportunities in the COALS and COE. The primary goal was to evaluate (1) the feelings of upper-level students concerning inclusion and (2) the utilization of CS & SSP on this University's campus. This research problem will be addressed through a mixed methods approach including knowledge mapping, surveys and focus groups, by exploring the following identifiers: 1) marginalization and 2) isolation. This is a work in progress, this report documents the step-by-step approach used up until data collection.

Introduction

As the demographics of the United States continue to change, corporations and institutions continue to push their goals and strategic plans of increasing the science, technology, engineering, and mathematics (STEM) workforce. Attempts to increase STEM enrollment at Universities consistently include the same concepts; bridge programs, learning communities, research experiences and group projects [1]. While attempting to increase undergraduate retention of (URM), these experiences often focus solely on first-year students. In order to meet their needs, diverse students must matriculate through the Colleges and Universities via the pipeline from secondary education to employment. NSF [2] reports show the attrition rates for black and Hispanic or Latino students in STEM fields from 2007 to 2013 is low. When looking at all the students earning bachelor's degrees who were freshman in 2007, 6.3% were Black and 7.1% Hispanic or Latino. By 2013, only 2.0% and 4.1% for blacks and Hispanic or Latino, respectively, had been awarded degrees [2]. The results are similar for students in the natural sciences, 14.7% in 2007 to 9.0% in 2013 for Blacks and 13.1% to 10.3% for Hispanic or Latino. Underrepresented minorities (URM) students in STEM encounter roadblocks during their undergraduate education, addressing these can help improve graduation rates.

At large institutions, students may also have access to additional services and programs to help them succeed beyond their first year. However, URM students hesitate integrating into these social networks due to a lack of cultural sensitivity and shared experiences among peers [5]. A

task force mentioned in Estrada [3] recognized that undergraduate science curriculums must shift to provide students with knowledge while responding to the increased use of technology and information. To enhance student performance and address this shift, courses may incorporate components that require social interactions of students and faculty outside of the classroom [4].

At Texas A&M University, within the College of Agriculture and Life Sciences (COALS) and the College of Engineering (COE), there are multiple facilities outside of the classroom designed to encourage climates of intercultural equity and inclusivity, such as the Engineering Innovation Center and the living learning communities, and program offices. These co-curricular spaces and student support programs (CS & SSP) are available to reinforce the knowledge developed in the classroom, and therefore are critical in 200+ level courses [6]. Despite their race or disability, an issue students encounter is the lack of availability of support [7] and they must seek it out somewhere else or learn to adapt. It is imperative that URM and non-URM students alike have access to CS & SSP and feel welcome using them. For URM students feeling welcome is often a major issue when it comes to accessing these spaces and programs. Without the interaction which occurs in and around these, students become isolated, and eventually leave. Studies show that for students to avoid feelings of isolation they develop informal networks outside of the classroom and prefer those when seeking out support [7] [8].

There are a number of academic, scholarship and social programs available to URM students the summer prior to as well as during their first year on campus. The first-year experience programs and initiatives are generally successful with helping students adjust to their new surroundings [8]. With these programs, students are able to matriculate through the rigors of their first-year curriculum with success, as they develop a network of peers, faculty, staff and administrators willing to mentor and support them. Oftentimes, first-year programs are just that and similar programs are unavailable in years 2 and beyond.

Co-curricular spaces and student support programs were created in hopes of encouraging an atmosphere of learning and to increase student retention during and beyond the first-year. Estrada [3] identifies different types of support programs available to students across various campuses and the level of intervention they provide to increase the number of URM students in STEM. From programs which emphasize research scholars to those that provide bridge programs and personalized academic plans and support [3], these address students' needs which cross academic and social identity. This is not always the case across campuses, for students who have not been provided an opportunity to participate in such programs, stereotype threats lead to students of color feeling isolated and marginalized [10]. If URM students do not sense inclusion in these spaces and programs, then they may refrain from using them. Couzens [8] interviewed students with hidden disabilities, disabilities which are not physical or observable, and asked students' questions about their perceptions and use of support. Questions asked were if students had received any learning support at their university, which supports do they find most useful, and which supports do they find least useful [8]. Likewise, Couzens [8] questioned the staff and support practitioners about what they thought the needs of the students were and if they have experienced any issues working with that particular student population. When considering the diverse STEM workforce, Allen-Ramdial [9] identifies the undergraduate to graduate interface as a major barrier for URM students advancing through the pipeline in STEM fields. Without proper guidance during the later years of students' undergraduate career, as they approach this

undergraduate to graduate interface, multiple factors contribute to them becoming "baffled" [9] or hesitant about the expectations and potential successes they could encounter in a graduate program. Efforts to dissolve these hesitations must occur during the undergraduate years, often in spaces and programs that support student development and achievement.

Factors which deter upper-level URM students from engaging in support programs and other student success opportunities may be rooted around institutional barriers. Issues centered around social identity can impact students drive toward achievement and success, refining institutional practices will lead to positive changes and potentially impact the movement of trainees through the pipeline [9]. Students of color must create and engage in social networks, while utilizing these spaces and programs, and move away from concepts of isolation and marginalization. We must evaluate URM compared to non-URM students' perceptions of inclusion for utilization of these CS & SSP. By identifying and addressing reasons that URM students do or do not engage, we can advance campus climate and progress towards goals of closing gaps in retention and graduation rates for all students.

The Issue of Marginalization: Catering to Students of Color's Needs and Desires
There is a potential disconnect in what URM students need and what their environment provides. When exploring students' perceptions of race in the classroom, Roberts [11] found that students felt their institutions were not providing learning environments which stimulated conversations about culture. For example, URM students may experience microaggressions [12] and feel intimidated by the lack of visible representation in their classroom experiences. Elam et al. [13] evaluated the importance of identity, social networks and relationships in higher education for underrepresented students. While most research focuses on the experiences of the students during their first year and how to increase retention into year two [6], [14], evaluation of the perspectives of URM students beyond that timeframe is limited and will be the focus of this work. The issue of marginalization addresses how upper-level students of color perceive that they are treated with regard to involvement in CS & SSP. Here, we evaluate how to expose and engage students to available programs and spaces with the assistance of the student support program practitioners across campus.

The Issue of Isolation: Collaborative Study and Learning Spaces Beyond the First Year
Social networks, in the form of collaborative study, are imperative for the production of high achieving students and increased retention. Tinto [15] investigated causes for student departure; their model depicts the impact of barriers that students face, which lead to isolation and eventually a decision to depart the university. According to the University's statistics website [16], Black and Hispanic students make up approximately 3% and 23% of the combined COALS and COE student population, respectively. Although URM students may have developed a team of peers in their first year, as they move into upper-level classes those teams disband across majors. Consequently, isolation commonly occurs within smaller academic departments, such as those found in the COALS and COE. Boateng & Thomas [5] noted that lack of social interactions by URM students could lead to misperceptions of competency by peers and faculty. This issue of isolation addresses how upper-level students perceive collaborative learning in CS & SSP. Here, we evaluate upper-level students' feelings of isolation and give them the tools necessary to address themes and gaps found from assessment results.

Proposed Methodology

This research problem is being addressed through a mixed methods approach including knowledge mapping, surveys, and focus groups. Overall, students will be able to identify gaps in inclusivity across the colleges and bridge them through knowledge gained from beginning to the end of the focus group programming. This research will use focus groups and surveys to evaluate the feelings of upper-level students concerning inclusion and the utilization of CS & SSP across campus. The experiences of URMs (Black and Hispanic) will be compared to their non-minority peers. Participants will document their perceptions on the existence or non-existence of barriers they encounter as upper-classmen and the availability of resources for their utilization and support. To encourage candid participation, focus groups will be small (5 to 10 students each) and racially homogenous. Participants responses will be recorded and all participants will receive a nominal monetary incentive.

To facilitate group discussions, participating students will complete pre-surveys to identify current knowledge areas and perceptions. Investigative questions centered around the two themes will be used to gauge students' awareness and utilization of various CS & SSP. During guided discussion, students will then share their experiences and perceptions of these services, and/or why they choose not to participate. The issues of marginalization and isolation will be specifically addressed. All sessions will be audio-recorded and transcribed for further analysis.

Recruitment will be conducted via campus-wide email, with additional identifying effort focused on race/ethnic-specific campus organizations (NSBE, SHPE, MANNRS, etc.) and other similar programs to those listed by Estrada [3]. Students must meet the requirements of 1) upper-level classification, and 2) declared major within either COALS or COE. Once knowledge gaps are identified, students will be introduced to the CS & SSP with which they are unfamiliar. Additionally, students will provide suggestions to improve and clarify how these spaces and programs could best meet their perceived needs. The focus groups will conclude by the end of the Spring semester (early May 2018), with results prepared for expected dissemination at the American Society for Engineering Education Annual Conference in Salt Lake City, UT, June 24-27, 2018.

Anticipated Results and Outcomes

The intent of this research project is to 1) understand experiences/events/relationships that students perceive as critical to their success and retention in the colleges; 2) understand the challenges that may be unique to URM students in COALS and COE, how they address those challenges, and whether they perceive their college as helping or hindering; and 3) provide SSP practitioners with data concerning student needs and expectations. Overall, we hope that students will be able to identify gaps in inclusivity across the colleges and bridge them through knowledge gained during focus group programming.

The information gathered during the focus groups will be shared with student support program practitioners of upper-level URM students concerns and needs. This should inform future work and programming provided by these practitioners.

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