

## **Board 14: Social Networks Analysis of African American Engineering Students at a PWI and an HBCU – A Comparative Study**

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Lesley Berhan is currently the Associate Dean of Diversity, Inclusion, and Community Engagement for the College of Engineering and an Associate Professor in the department of Mechanical, Industrial, and Manufacturing Engineering at The University of Toledo. Her research interests are in the areas of composites and fibrous materials and engineering education. She received her B.Sc. in Civil Engineering from the University of the West Indies in St. Augustine, Trinidad, her M.S. in Civil Engineering from the Massachusetts Institute of Technology, and her Ph.D. in Mechanical Engineering from the University of Michigan, Ann Arbor. She joined the faculty at the University of Toledo in 2004. As the Associate Dean of Diversity, Inclusion, and Community Engagement she leads the development and execution of initiatives and programs to facilitate the recruitment, retention, and success of women, students from underrepresented groups and first generation students. These duties are well aligned with her current research interests and external funding in engineering education.

### **Dr. Aaron Lee Adams, Alabama A&M University**

Aaron Adams is an assistant professor in the Department of Mechanical and Civil Engineering at Alabama A & M University. Before pursuing graduate studies, he worked at the National Academy of Engineering & Ford Motor Company as a product design engineer focusing on Minority STEM education and environmental policies. His research interests include nuclear radiation detection and thermal electric material development. He also works with the Center for Entrepreneurship Innovation and Economic Development to encourage African American students, and underrepresented groups in developing business innovation and ideas.

### **Dr. Willie Lewis McKether**

Willie McKether is the Vice President for Diversity and Inclusion and Vice Provost at The University of Toledo. Formerly, he was associate dean in UT's College of Languages, Literature and Social Sciences and is an associate professor of anthropology in the Department of Sociology and Anthropology. His academic areas of focus include African-American migration and culture, as well as business anthropology and urban anthropology, with a focus on student retention and school culture as well as social network analysis. He earned a bachelor's degree in economics from Grand Valley State University, a master's degree in business administration from Saginaw Valley State University, and a Master of Arts degree in labor and industrial relations, as well as a doctoral degree in business anthropology, from Wayne State University. Dr. McKether is a founding member (2011) of Brothers on the Rise, a retention and mentoring program at UT as well as the Multicultural Emerging Scholars Program (MESP) summer bridge program at The University of Toledo. His community involvement includes: advisory board member, Art Tatum African-American Resource Center at the Toledo-Lucas County Public Library; founding member (2009), Edrene Cole African-American Oral History Collection in Toledo; member of United Way of Greater Toledo's African-American Leadership Council; and he is a Board of Trustee member with YMCA. He also is past president of the Central States Anthropological Society.

### **Dr. Revathy Kumar, University of Toledo**

Ph.D. in Education and Psychology from the Combined Program in Education and Psychology, University of Michigan. At the graduate level, she teaches courses in Adolescent Development, Motivational Theory and Application, Cultural Perspectives in Learning and Development, and Self and Identity. Her research focuses on social and cultural processes involved in constructing a sense of self and identity among adolescents in culturally diverse societies. Of particular interest are the role of teachers, teacher-education programs, schools, communities, and families in facilitating minority and immigrant adolescents' development, learning, and motivation. Her work is published in *Journal of Teacher Education*, *Journal of Educational Psychology*, *Journal of Research on Adolescence*, *Contemporary Educational Psychology*,

and Cultural Diversity and Ethnic Minority Psychology. She received a Spencer Foundation Grant in 2007 to examine academic prospects, interpersonal relationships, and social well-being of students in school districts with a high concentration of students of Arab and Chaldean origins. Recently, she received internal grants from the University of Toledo to conduct mindfulness intervention projects with elementary school students and preservice teachers. She is also the recipient of the Fulbright Specialist Fellowship to pursue her interest in culture, mindfulness, and motivation in cross-cultural and international contexts.

## **Social Networks Analysis of African American Engineering Students at a PWI and an HBCU – A Comparative Study**

The central objective of this interdisciplinary, inter-institutional PFE: Research Initiation in Engineering Formation (PFE: RIEF) project is to conduct a comparative study of the factors affecting the success and pathways to engineering careers of African American students at a Predominantly White Institution (PWI) and a Historically Black University (HBCU). The study focuses on investigating the criticality of the following three factors:

1. The attitudes and beliefs of faculty and staff toward underrepresented students and how these attitudes influence their classroom and advising interactions and expectations, and the impact this has on the students' sense of belonging and academic success;
2. The existing institutional support mechanisms at both institutions and students' perceptions of their efficacy and the role they perceive these mechanisms play in their academic success; and
3. The influence of student organizations- specifically underrepresented minority engineering affinity groups and the embedded networks therein on the social and academic integration of African American students at the two types of institutions.

### **Introduction**

This paper provides a preliminary examination of social network data collected as part of the larger study. While the results are preliminary and focus on the whole network of 23 students at the HBCU and 25 students at the PWI, they are promising and help us better understand the importance and role of networks in student belonging at the two institutions.

Social network analysis is a methodological approach that examines the relationships an individual actor or actors have with other individuals, groups, or organizations in an environment. The relationships are referred to as links, edges, or ties. Actors are referred to as nodes, alters, or vertices and may be places, organizations, or people. A primary goal of social network analysis is to depict the structure of a group (Wasserman & Faust 1994) by examining important relationships reflected in the strength, direction, and complexity (or number) of ties embedded in a network. The strength of such an approach is that it enables an analysis of social phenomena beyond the abstract social structures (e.g. social, economic, political) traditionally studied by researchers in the social and behavioral sciences (Wellman 1999).

Ego-centered (or personal) networks make the individual the focus of attention where ego describes people (alters) close to him or her (Boissevain 1974; Wellman & Berkowitz 1988). According to Wellman (1999), such investigations "enable researchers to study community ties, whoever with, wherever located, and however structured...and avoid the trap of looking for community only in spatially defined ways" (p. 19). Whole networks, which may include ego-centered networks, describe the structure of relationships of a population (Wellman 1999).



someone else in the network said they had a tie (relationship) with the person to whom the lines extend. A solid line extending between two people indicates a reciprocal relationship in that both people in the relationship mentioned each other in the network surveys completed by the students.

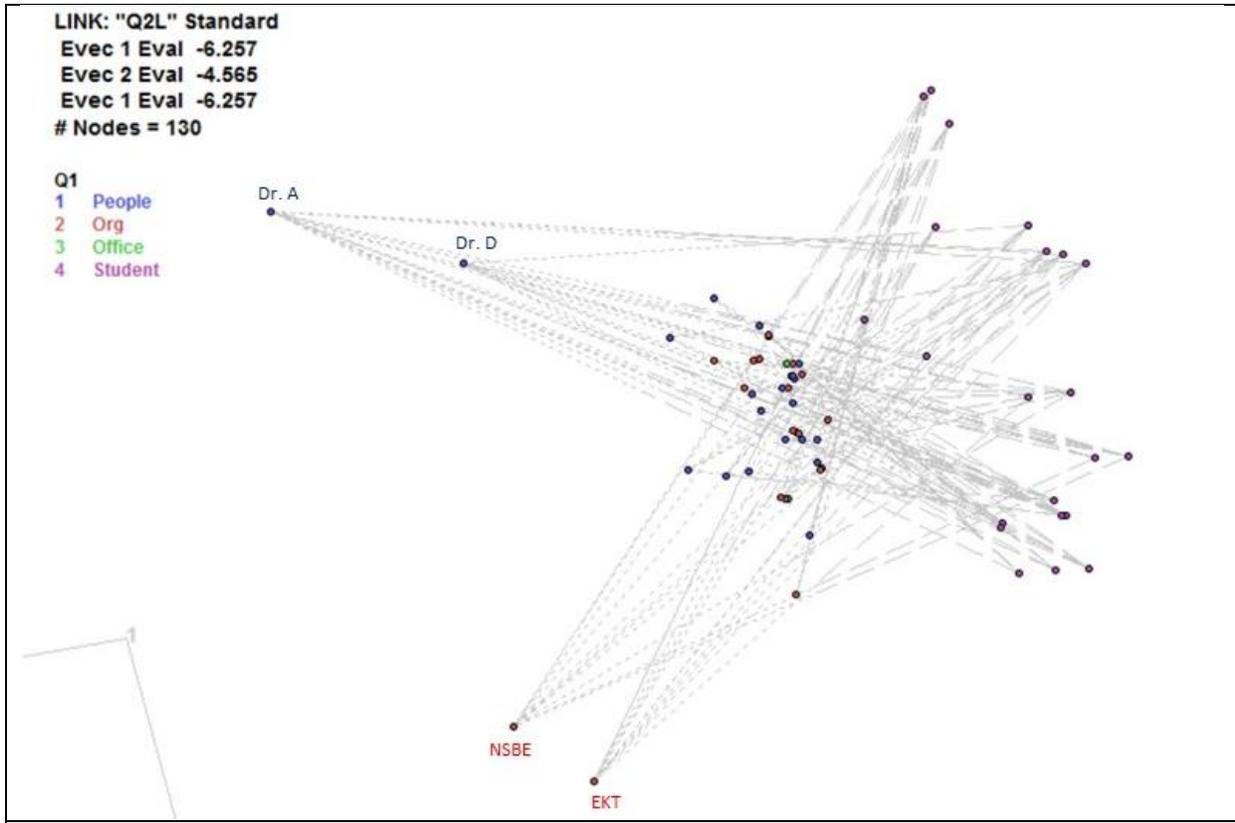


Figure 2. HBCU network map.

The network map for the PWI is shown in Figure 3. NSBE stands out as being critically important.

Negopy is a network program designed to examine network structure among groups that comprise a dataset. A group is defined as a collection of individuals that have more interaction with members of their group than with nonmembers or members of other groups.

A group's standard deviation is a measure of variability within the group. An individual group member's distance ratio is a measure of the number of steps it takes for the group member to reach other members of the group; it is also a measure of how central the individual is to the group. Individuals that are most central within a group will have a higher standard distance than other group members. Network data generated through Negopy show that the network structure at the HBCU has two embedded groups that help define the nature of the network structure with one L1 liaison while the PWI structure is comprised of four embedded groups with one L1 liaison. The network structures are presented in Table 1 below. These differences suggest that the HBCU network is comprised of two large tightly connected groups where

faculty play critical roles within the groups and where a faculty member serves as the liaison between the two groups. The PWI, on the other hand, is comprised of four groups which include one large tightly connected group and three fragile groups. The liaison is the Learning Enhancement Center (LEC) at the university. In addition, the groups at the HBCU are comprised of significantly more faculty, staff and student organizations relative to the groups at the PWI.

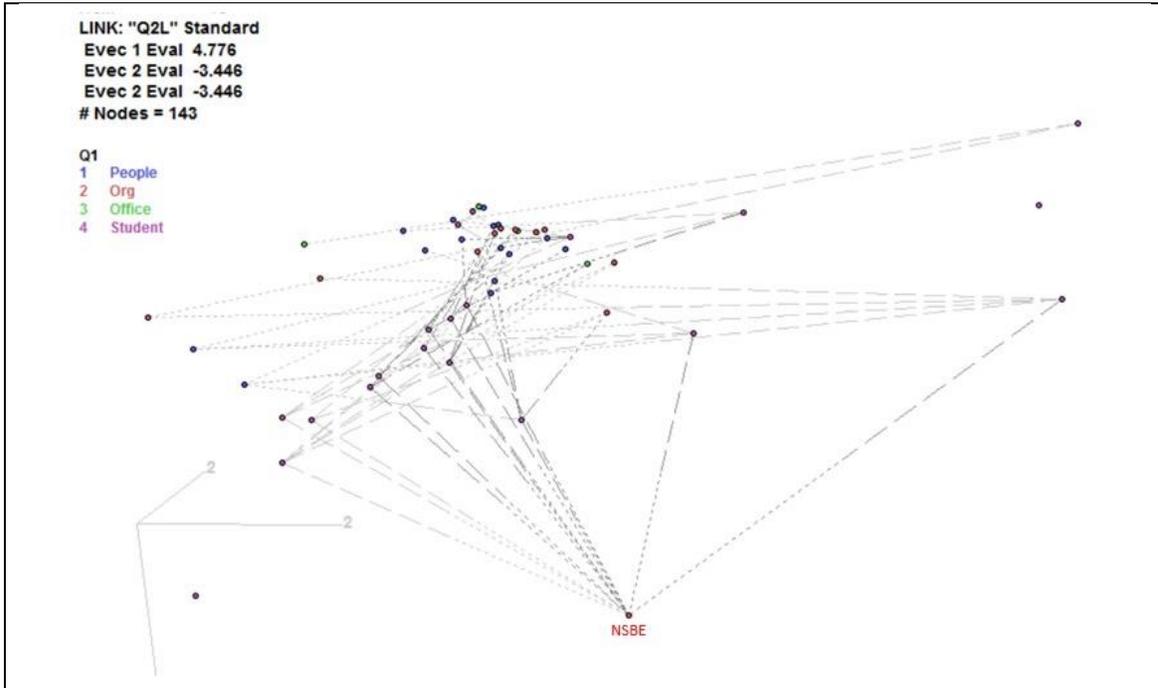


Figure 3. PWI network map.

Table 1. Network Structure Comparisons

	*Group 1	<b>SD</b>	Group 2	<b>SD</b>	Group 3	<b>SD</b>	Group 4	<b>SD</b>	**Liaison
HBCU	23	<b>.39</b>	24	<b>.45</b>	-	-	-	-	Dr.T.
PWI	18	<b>.38</b>	3	<b>.28</b>	3	<b>.28</b>	4	<b>.38</b>	LEC

\* A Group is a set of at least three people who: have more than 50% of their linkages with one another; are connected by some path lying entirely within the group to each of the other members in the group; and who remain so connected when up to 10% of the group is removed (no critical nodes).

\*\* A L1 Liaison is direct liaison. This is a person who has more than 50% of his linkage with members of groups in general, but not with members of any single group. Links groups directly.

### *HBCU Groups*

#### Group One: The Faculty-Student Led Group

Network data shows that the Faculty-Student Led group is comprised of 23 central nodes including faculty, students, staff and student organizations with a standard deviation of .394. The small standard deviation indicates that the Faculty-Student Led network is comprised of a tightly connected group with everyone in the group having easy access to other group

members. However, Dr. A's -2.39, and students student A and student B's -1.35 and -1.12 standard distance scores, and Dr. D's -1.004 scores indicate they are the most central people in the group and thus has easier access to other group members than members with lower distance ratio scores.

#### Group Two: The Student Organization and Student Led Group

Network data shows that the Student Organization and Student Led Network is comprised of 24 central nodes with a standard deviation of .453. The network's small standard deviation indicates that the group had little variability and was a tightly connected group of individuals, where in general, all group members had easy access to other group members. Data show that student organizations EKT (-2.04) and NSBE (-1.66) are the most central nodes in group two, followed by EKT and NSBE members and graduating seniors student C (-1.08) and student D (-0.84).

This data suggests that EKT and NSBE are not only central but also serve as the foundation around which students cluster, and where the organization's network facilitates students' sense of belonging and extends networking opportunities.

#### Bridge Links between the two Networks

Through liaisons and bridge links, network analysis makes a distinction between node relationships that connect two groups. Liaisons are nodes (people) that do not belong to a particular group but have ties with group members that belong to different groups. Bridge links on the other hand are nodes (people) who are members of one group but have a relationship or ties with a node or nodes from another group, all the while maintaining allegiance with a single group (Negopy Manual 1995). In the HBCU network structure, Professor T. serves as a T1 liaison. In this role, while he does not have membership in either group one or two, he has significant ties with members in each of the groups.

#### *PWI Groups*

Four groups emerged from the PWI network data as shown in Table 1. The largest PWI group is comprised of 18 nodes including the engineering student organization NSBE, students, staff and faculty, and has a .383 standard deviation. This small standard deviation suggest that the whole network includes a tightly connected group with group members having easy access to other group members. Significantly however, the node with the highest standard distance is the student organization NSBE, with a -2.15 standard distance, followed by three university students each having a -.922 standard distance. This data suggests that NSBE serves as the central focal point where African American students cluster in engineering at the university, and that student members play a central role in connecting students to one another as well as to NSBE.

Two of the remaining groups embedded in the PWI network are comprised of three members each, and the fourth group is comprised of four members. Even though each of the groups is considered to be highly connected, in each case an office or organization (Student Government, Office of Multicultural Student Success, and Student African American Brotherhood) is one of

the nodes in these small groups. These group compositions suggest that offices and or organizations outside of NSBE and the College of Engineering play important roles in African American engineering students' belonging and engagement at the PWI. At the PWI the Learning Enhancement Center was found to be a T1 liaison.

**Discussion**

The results of these preliminary social network analyses show that the social networks of engineering students at the HBCU are denser than at the PWI. At both institutions, black engineering organizations (i.e. NSBE at both institutions, and EKT at the HBCU) were of critical importance to the connectedness and sense of belonging of the students. The PWI network map showed some isolated nodes which there were no isolated nodes in the HBCU network map. At the HBCU, engineering faculty members played a central role in at least one of the network groups. At the PWI only one of the nodes in the large 18 node group was an engineering faculty member. It is worth noting that this faculty member is African American and the faculty advisor of the NSBE chapter. The other faculty members or administrators in the large PWI network group are both African American administrators within the university. University level offices for underrepresented students are also members of the smaller network groups at the PWI. This suggests that the engineering students look for community outside of the College of Engineering.

The data collected during the individual interviews with students support the social network analysis results. The table below is based on the analysis of five interviews; 3 HBCU and 2 PWI.

PWI	HBCU
<p><b>Mentors: Peers</b>  <b>Interviewer:</b> Do you have a mentor at the university?  <b>Male Speaker:</b> A mentor? Not specifically. B(another senior student) was my mentor-- B was my mentor last year for bioengineering. That was cool. Basically my mentors are just-- she was in NSBE. She introduced me to NSBE. I consider my mentors those that are seniors now in NSBE or those that graduated. Everyone is always a text away so I can always ask them if I have a question about something.</p> <p><b>Lack of mentorship</b>  <b>Interviewer:</b> Thinking about your experiences here on campus, did you have a mentor here?  <b>Male Speaker:</b> No.  <b>Interviewer:</b> Do you feel like a mentor would have been helpful in your experience?  <b>Male Speaker:</b> I feel like a mentor would have encouraged me to do more on campus stuff. But as far as set goals for a college career and life after college, I don't think that would have made a difference. Maybe just being more involved on campus and things like that. I think that would be</p>	<p><b>Mentors: Faculty</b>  <b>Female Speaker:</b> I have professors that are readily available that I can go to and get help if need be. Would I specifically call them my mentor? No. They are available for help.</p> <p><b>Interviewer:</b> Are there people here you feel you can turn to when you need academic support?  <b>Female Speaker:</b> Yes.  <b>Interviewer:</b> Can you give an example of who that person might be? Anyone specific?  <b>Female Speaker:</b> We have a professor named Dr. D. If I need help with just about anything, or if I need to talk, I can go to his office and he's there. If I need help with one of my classes and the professor for that class is not available, I can go to him. He knows like everything. Or if I want to talk, if I am having a problem, or I need some type of resource, I can go to him. He is pretty much available for all of that.</p> <p><b>Interviewer:</b> Do you have a mentor here at ____ or anyplace else?  <b>Male Speaker:</b> Most of my professors are my mentors. Even people in the career services office,</p>

<p>the only area. Nobody was really motivating me to do some things.</p> <p><b>Interviewer:</b> Okay. You said you don't have to go anywhere for academic support. Do you think your professors help you with your learning, and what sort of support do they provide?</p> <p><b>Helping students during office hours</b></p> <p><b>Male Speaker:</b> If I am struggling in a class, I would go to my professor's office hours. Calculus right now, the professor that I have don't go about presenting to a level where students would understand. So I go to him one on one for help. <i>On some days, he is able to provide better help. On some days, it's not good to go to him.</i></p> <p><b>Library Learning Center</b></p> <p>So the learning center in the basement of the library, they make math fun. Fun where it's easy to understand. You can explain it to someone and they will understand it. That is the best thing I like about _____.</p> <p><b>Interviewer:</b> So when you are in class, sometimes the professor is not clear.</p> <p><b>Male Speaker:</b> It is confusing to us.</p> <p><b>Instructional Quality</b></p> <p><b>Interviewer:</b> Okay. So are you saying then that professors are not that helpful?</p> <p><b>Male Speaker:</b> Some of them are not delivering a lecture that would make the student like to learn the class. <i>I have had few professors that actually do an amazing job that made me love the class. If it's boring, I tend to find something, even if it's one thing, to make it interesting so I can keep coming to it. If I can find anything that is interesting to keep coming to it, then I am like what is going on? Because I am lost.</i></p> <p><b>Interviewer:</b> So you try to find something of interest, but sometimes even that is not enough.</p> <p><b>Male Speaker:</b> Yes, especially if it's just a TA that is put in professor status but that does not know how to properly deliver a lesson like the way a professor who has been teaching a long time does.</p> <p><b>Faculty support for students with disabilities</b></p>	<p>the housing office, air mart office. I speak to a lot of people and really they all give me some type of mentorship on how to get where I want to be.</p> <p><b>Interviewer:</b> This next set of questions, think about your college and your professors when you answer these. Are there people her you feel you can turn to when you need academic support?</p> <p><b>Male Speaker:</b> Absolutely. One individual that came to mind when you said to think about college is a guy named M. He is an SI. He is very passionate about achieving. He is the type of guy to be angry if somebody made a higher grade than him on a test. If you want to learn, it's best to learn from someone like that. Also, your teachers, your professors, granted they are not always in their office because they are busy, but when they are in their office they are more than glad to help you. There's tutors. Your friends. There's a lot of resources.</p> <p><b>Interviewer:</b> Are there any professors that come to mind that you know you can go to if you need help?</p> <p><b>Male Speaker:</b> Yes sir. I know I can go to my Calc. II professor Dr. W. I can go to my engineering professor for material science, Dr. A. My engineering professor for linear analysis, Dr. D. Even if I want to do Java, I can go to Dr. F. She is a computer science engineer and she can give me that [support]</p> <p><b>Faculty as Role Models</b></p> <p><b>Male Speaker:</b> I never really had a good chance to interact with people. I have met more and more people and they helped me out throughout my college experience. People like Dr. V Dr. Y. They gave me inspiration. When I first came here, Dr. Y was my first engineering teacher. I used him as a layout for all my other classes. <i>When I first got into this class, we didn't start with engineering, we started off talking about how to adapt to college life. Study habits, managing your time, managing your friends, stuff like that. Setting specific times for specific things. The importance of work over play, stuff like that.</i></p> <p><b>Interviewer:</b> Okay. Lets talk about academic support and help seeking?</p> <p><b>Male Speaker:</b> I have a few. For one, Dr. X, Dr. Y. Especially Dr. Y because he's really good in propulsion. I plan to stay close to him to learn as</p>
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<p><b>Interviewer:</b> I see that. Have there been any professors who have made you self conscious or have they been generally supportive recognizing the impediment?</p> <p><b>Male Speaker:</b> My physics professor Dr. H, is a fine professor. So after having lecture, he and I will talk. When we speak, in a sense it makes me feel welcome to his lecture hall. He and I talk to help me understand what is going on in the class and much better prepare myself for the tests and quizzes. My freshman year, the professor I had was _____. She was my professor for introduction to religion. She was the woman that actually helped me to better study for my tests and quizzes. She gave me the best studying tip which I still use. She told me to take an index card, cut it in half, write on the front and back, so I can better prepare for test and quizzes. It has worked since then. She helped me feel I belonged here on campus. I didn't feel I belonged because what she told me, I give it to my fellow colleagues. With that, we built a good relationship.</p>	<p>much as I possibly can. . . . For example, Dr. Y, he is intense. The stuff I learned in his class, I was able to apply to the racecar I was telling you about earlier. A lot of his theories I have been able to do that.</p>
<p><b>Interviewer:</b> What sort of expectations do your professors have for you?</p> <p><b>Male Speaker:</b> I don't know. It's pretty hard to tell. I never really engaged with any of my professors. I just did the work and that was it. I didn't really care for anything else.</p>	<p><b>Interviewer:</b> Okay. What sort of academic expectations do you think your professors have for their students?</p> <p><b>Male Speaker:</b> They want everyone to get an A. That is what they expect. It doesn't always play out like that.</p> <p><b>Interviewer:</b> They have high expectations though?</p> <p><b>Male Speaker:</b> Right. They want you to get an A or at least understand the concept.</p> <p><b>Interviewer:</b> So that's just one example of the kind of support you get. What sort of academic expectations do you think the professors have for their students here? High? Low? Medium?</p> <p><b>Male Speaker:</b> Moderate expectations. There are some people that exceed expectations and some people who fall below. We try to moderate everyone, but put emphasis on people who want to do more. Some people aren't good at it, so we work with them. They could be the smartest person you know but they bomb the test. I have seen it many times. So they can take them outside, speak to them in their office hours or break. They find out they know the material but are just bad test takers. And vice versa.</p>
<p><b>What made you join?</b></p> <p><b>Interviewer:</b> So why did you join NSBE?</p>	<p><b>What made you join?</b></p> <p><b>Interviewer:</b> Are you a member of NSBE or EKT?</p> <p><b>Female Speaker:</b> Yes, NSBE.</p>

**Male Speaker:** I joined NSBE because I wanted to be a member of an engineering association. I mainly joined NSBE because it's mainly undergrads. Every undergrad might have some kind of minor and same major. I didn't have much going on Friday nights so I was like why not join an organization

**Interviewer:** . . . Right. I hear what you are saying. Going back to NSBE, you said you are a member and chose to become a member because Fridays you were free.

**Male Speaker:** That was African People's Association (APA). I chose NSBE because it's a black organization and it is mainly made up of undergrad students to have the same classes and textbooks. Textbooks are expensive so we can share. The best thing about NSBE-- it has a study table where members can come to and study together. Just to develop each other to be better black engineers which is amazing. There's a group for engineers that a made mainly of Caucasian students [at the university]. I was like why--

**Male Speaker:** Right. But I think me joining an organization like NSBE kind of helps because I can text a group and say, does anyone know this? We have study tables everyday.

**Interviewer:** Where is this located?

**Male Speaker:** North engineering.

**Interviewer:** So you have a specific place [on campus] for the NSBE students to meet.

**Male Speaker:** I'd say I hang out with NSBE folks a lot. Just friends.

**Interviewer:** Are they the same background as you?

**Male Speaker:** My NSBE friends are definitely the same background. I know APA people as well. African People's Association. They are a good group of people too I don't just try to hang out with one group of people. I always try to broaden my views. So like I say it's just a-- there's black folks. I went to a table tennis organization before. That's mostly white guys which is fine. I know fraternity guys, like Sig Ep and all that. When I look for friends, it's not that I am only hanging out with black guys or white people

**Interviewer:** So there's an engineering organization on campus that is mainly white students.

**Male Speaker:** Yes. I tried to get into it, but somehow they turned me down.

**Interviewer:** Who turned you down?

**Male Speaker:** The organization. So I never bothered with it again. The frat, party and have fun.

**Interviewer:** Why did you choose to become a member?

**Female Speaker:** Initially when I first got here, Dr. Y was telling us we should join engineering organizations and NSBE was like his top organization that he recommended to us. I did a little research and there were a lot of networking opportunities associated with NSBE, so I joined.

**Interviewer:** Are you a member of NSBE or EKT?

**Male Speaker:** I am a member of NSBE.

**Interviewer:** Why did you choose to become a member?

**Male Speaker:** Because one, I was told to, and second, it's the national society of black engineers and I am a black engineer. So I chose to become a part of it. Michael Lan, the leader of NSBE, does a really great job offering opportunities for students in NSBE and stuff like that.

**Interviewer:** Who encouraged you to become a part of NSBE?

**Male Speaker:** All of the engineering professors, even recruiters from companies. They said, are you a part of NSBE? You should be a part of NSBE. So if you are not a part of NSBE, it's like what are you doing?

**Interviewer:** Okay. Since you have been here, are there any aspects of your college experience that have been impacted by NSBE?

**Female Speaker:** The members here, I can go to them. They have a lot of resources about scholarships and internships. I had an opportunity to go to a conference, but I didn't make it. I think that would have impacted me greatly, but I wasn't able to take the opportunity. Some of the members can give me information about NSBE scholarships, internships, and different things like that.

**Interviewer:** Fair enough. How would you describe NSBE in a single word to somebody else?

**Female Speaker:** Helpful

**Interviewer:** Okay. The last set of questions deal with NSBE and EKT membership. Are you a member of NSBE and/or EKT?

**Male Speaker:** I am a member of NSBE.

**Interviewer:** Why did you choose to become a member?

<p>NSBE is serious. They come together as a group and raise funds to keep it going.</p> <p><b>Interviewer:</b> So you said you are part of NSBE and that it was B (a senior) who brought you into it. How did you become a member?</p> <p><b>Male Speaker (same student as a above :</b> I just came to a meeting one time. I thought they were a good group of people. We hung out. When I was first getting to know everyone, we did a little get together where we had mac n cheese. It was pretty cool. We went to regionals and nationals together. It was basically like a career fair. NSBE is an organization that every college has. We have this thing called regionals. There are 6 regions. We are region 4. All the NSBE chapters go to this one centralized location. This year it's Cleveland. We have a career fair and different workshops. You get to know other black engineers from around your region which is cool. But in terms of how I got in NSBE, when you do that you get closer to members. So I was like, this is cool.</p> <p><b>Interviewer:</b> How important is being in NSBE to you?</p> <p><b>Male Speaker:</b> I would say it's pretty important. Those are a good group of people that I've met. I feel like I will be in it for the rest of my college career.</p> <p><b>Interviewer:</b> Now do you feel like your education prepared you to work at your job now?</p> <p><b>Male Speaker (same student as above):</b> I would say probably about 15-20%. What I really learned came from experience, internships, and doing my own personal research in my field.</p> <p><b>Interviewer:</b> Okay. Now were those internships that you spoke about part of your program here at University of Toledo? Or did you find them?</p> <p><b>Male Speaker:</b> One was on my own. Second one, I guess you could say it was. It wasn't with the college of engineering, but I got the second one at a NSBE conference. So I guess you could say the university had something to do with it.</p>	<p><b>Male Speaker:</b> I found NSBE has a lot of really good networking opportunities. In addition to that, they have a lot of really good speakers where they get black engineers from a lot of different places-- NASA, Apple, Lockheed Martin, Google, Target, Publix, people from everywhere. It's really inspiring to see black people give back to the community and tell us how their experiences are outside of college and in the workforce. We have no idea what we are jumping into and they give us a little insight to give us a peek through the door to show us what we need to do to get there.</p> <p><b>Interviewer:</b> Do anyone encourage you to join NSBE?</p> <p><b>Male Speaker:</b> A lot of my friends did. When I first got here, I met my friend JS and we joined together. I met him in Dr. Y engineering class. We sat beside each other and we were kind of like, used to piggyback off of each other. We used to compete to see who could answer the most questions. I think Dr. Y got tired of us [laughing.]</p> <p><b>Interviewer:</b> So what aspects of your college experience do you feel have been impacted by NSBE the most? Academic, personal, professional, social?</p> <p><b>Male Speaker (same student as above):</b> All of them. NSBE plays a big part in each one of those. I have met a variety of people in NSBE that have helped increase my academic standing exponentially. Meeting people goes with social. I got to talk a lot with teachers. I met many new teachers that teach outside of what I am studying, but are still relative to what I am studying. Talking to them, I can better understand the subjects I am studying.</p>
<p><b>Interviewer:</b> What do you think the university can do to make it easier for students from all backgrounds to come together? You kept saying it should be inclusive. How can the university do that?</p> <p><b>Male Speaker:</b> I want to say acknowledge the different races of people. Incidents happened my freshman year where someone hung a Trump at the student union. That brought a debate I was highly against. I know not every university is perfect. In a</p>	<p><b>Interviewer:</b> The question is, do you have a mentor either here at the university or any place else?</p> <p><b>Female Speaker:</b> I have professors that are readily available that I can go to and get help if need be. Would I specifically call them my mentor? No. They are available for help.</p> <p><b>Interviewer:</b> Okay. Do you think it would help if you had a mentor in your academic life?</p> <p><b>Female Speaker:</b> Yeah. That would probably be a good help.</p>

<p>sense of how to include everyone together, it's like once in a while, acknowledge the different organizations. The university tends to focus mainly on supporting student athletic and other stuff. Once in a while, advertises the different groups of organizations, not just different sports.</p> <p><b>Interviewer:</b> Again thinking about your experience in the workforce, is there anything that you feel your education could have given you more of to prepare you?</p> <p><b>Male Speaker:</b> Yeah. I guess how to deal with people in the work place. Like, aside from doing your job, you also have to deal with people. I feel like there should have been more soft skills maybe that you educate people on. There's some stuff you don't really find in a book. I would say that.</p>	<p><b>Interviewer:</b> Two last questions. What advice would you give to your university on how to better serve it's black engineering students?</p> <p><b>Male Speaker:</b> I don't know to be honest. What they have going now is actually pretty good. I can't see it being any better.</p>
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The preliminary social network analysis results provide some interesting data on the networks of engineering students at the HBCU and PWI. The data supports one of the central hypotheses of the larger study- that minority student affinity groups like the National Society of Black Engineers (NSBE) is very important to the connectedness of black engineering students in general, and those at the PWI in particular. At the PWI students also found community in other minority student groups across campus, rather than other engineering organizations which appeared to be less welcoming.

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