

## **Transforming the Culture of Internship Experiences through Social Learning Communities**

### **Dr. Lisa Massi, University of Central Florida**

Dr. Lisa Massi is the Director of Operations Analysis for Accreditation, Assessment, & Data Administration in the College of Engineering & Computer Science at the University of Central Florida. She is Co-PI of two NSF-funded S-STEM grants and program evaluator for two NSF-funded REU programs. Her research interests include factors that impact student persistence and career development in the STEM fields.

### **Ms. Jenna Christie-Tabron, University of Central Florida**

Ms. Jenna Christie-Tabron is the Program Assistant for a NSF-funded S-STEM program at the University of Central Florida. She is responsible for tracking the students' progress throughout the program and assists with coordinating events for the students and staff members. She also has a Master's in Marriage and Family Therapy and is obtaining a Master's in Social Work.

### **Dr. Michael Georgiopoulos, University of Central Florida**

Michael Georgiopoulos received the Diploma in EE from the National Technical University in Athens, his MS degree and Ph.D. degree in EE from the University of Connecticut, Storrs, CT, in 1981, 1983 and 1986, respectively. He is currently a Professor in the Department of ECE at the University of Central Florida in Orlando, FL. From September 2011 to June 2012 he served as the Interim Assistant Vice President of Research at the Office of Research and Commercialization. He served as the Interim Dean of the College of Engineering and Computer Science from July 2012 to May 2013 and as the dean from May 2013 to present.

His research interests lie in the areas of Machine Learning and applications with special emphasis on neural network and neuro-evolutionary algorithms, and their applications. He has published more than 70 journal papers and more than 180 conference papers in a variety of conference and journal venues. He has been an Associate Editor of the IEEE Transactions on Neural Networks from 2002 to 2006, and an Associate Editor of the Neural Networks journal from 2006 to 2012. He has served as the Technical Co-Chair of the IJCNN 2011.

### **Ms. Mari Pina, University of Central Florida**

Mari Pina is the Director of Employer Partnerships and Internship Placements for the CAMP-YES Internship Program and IT Certifications Program. She is responsible for tracking student and employer communication, recruitment and placement along with tracking the progress of the student's experiences YES Internship Program. Ms. Pina is a doctoral candidate and her research interests include engineering student soft-skills gap and self-efficacy as relevant employability skills.

### **Mr. Richard Allan Quinn, University of Central Florida**

Richard Quinn, CBC

Mr. Quinn joined the Management faculty of the University of Central Florida's College of Business Administration in 1999 after retiring from a successful 27-year career at Eastman Kodak Company. Mr. Quinn currently serves as an Associate Instructor and teaches Management Strategy, Technological Entrepreneurship, New Venture Finance, and New Venture Implementation at the college. Mr. Quinn is a founding member of UCF's Center for Entrepreneurial Leadership, and serves as the internship and entrepreneurship mentor for the College of Engineering and Computer Sciences undergraduate Young Entrepreneurs and Scholars grant programs.

### **Ms. Jackie Herold, University of Central Florida**

Ms. Herold has over 20 years experience in the workforce development arena by creating academic and industry partnerships as part of her role with the Office of Experiential Learning. After earning her M.A. in Human Resource Management, Ms. Herold spent several years in the human resources field with an emphasis in recruitment and selection. From there she launched into the workforce development initiative by creating academic and industry partnerships designed to align student education with the needs of the business community. Identifying the relevant skills and knowledge needed by industry and then providing students with internships, cooperative education and other work based learning programs has been the cornerstone in preparing our students for successful transition to the workplace.

**Mrs. Kim A. Small, University of Central Florida**

Kim Small is the Director of Academic Support Services for the College of Engineering and Computer Science. She holds a BS in Business Administration and a MA in Educational Leadership. She joined the University of Central Florida in 1995 and has served in various advising roles for the College of Engineering and Computer Science. She is responsible for coordinating the student support services for undergraduate and graduate students. She is also responsible for running the college retention programs. Mrs. Small's interests lie in the areas of retention and transition of freshmen and transfer students. She has been honored with advising awards from UCF and a NACADA Certificate of Merit for Outstanding Advising Program. Mrs. Small serves as the advisor for the NSF S-STEM program entitled, "Young Entrepreneur and Scholar (YES) Scholarship Program."

# Transforming the Culture of Internship Experiences through Social Learning Communities

## Abstract

Research studies on undergraduate students' participation in internships and co-operative education have primarily focused on career outcomes (job offers, higher salaries), skill outcomes (technical, team, and communication skills), and personal outcomes (self-efficacy, career paths). Fewer studies have investigated how the social structure (such as a community of practice) contributes to engineering identity formation. This study examined the most-memorable individual and collective group experiences that undergraduate student interns constructed from their participation in social learning activities in a sponsored program, the Young Entrepreneur & Scholar (YES) program. Using a convenience sample of 45 students participating in this program within the College of Engineering & Computer Science at a large public university, students were asked to write down their "best program memory." This question was left open-ended so that students could respond with individual values they ascribed to their experiences. The remaining six questions on the questionnaire provided further details for three selected case study narratives illuminating the students' holistic perspective on their program experience.

A distinguishing feature of the program was the value-added activities offered with the purpose of creating a social learning community involving interns, industry professionals, faculty, and support staff. Value-added program activities included Socials, Distinguished Speaker Series, and an annual Symposium. These activities reflected the integration of varied communities of practice (in this case, the business world and the academic world) that comprise the social learning system of the student intern. Twenty-seven percent ( $n=12/45$ ) of the respondents specifically referenced one or more of the three value-added program activities as a memorable experience: Socials, Distinguished Speaker Series, or Symposium. The annual Symposium was the most frequently mentioned event. Of the remaining respondents, 24% ( $n=11/45$ ) referenced the relationship with their industry mentor as the most memorable experience; 44% ( $n = 20/45$ ) referenced some aspect of their internship, primarily related to their assigned project; and 4% ( $2/45$ ) had just begun their internship. Participation in one or more of the three value-added program activities was related to enjoyment in shared learning experiences, commitment to the major, confidence-building, and feeling welcomed into the community. Relationship-building activities and experiences seemed to have had the most meaning for women and first generation college students by creating a welcoming environment to the engineering community. Recommendations for internship and co-operative education practitioners in establishing social learning communities are included in the paper.

## Literature Review

Motivation theories seek to explain how an individual's action relates to their achievement behaviors<sup>1</sup>. These theories have their basis in varying disciplines (such as education, psychology, sociology, biology, and neuroscience), reflecting the perspectives and flavors of each discipline to explain the complex construct of motivation. The brain is a social organ that is constructed by experience, and relationships are a fundamental driver of the evolution of the modern human brain<sup>2</sup>. The need-to-belong motivates human behavior and shapes emotion and cognition<sup>3,4</sup> and encourages behavior that helps people be good group members<sup>4</sup>. Stets and Burke<sup>5</sup> suggest that by linking social identity theory (an individual's acceptance of a group's norms and culture) and identity theory (role that the individual plays within the group), we may be able to have a more holistic view of the self. Social cognitive theory views human behavior as agentic, influenced by the reciprocal interaction of the person and the environment, and where learning occurs in a social context<sup>6,7,8</sup>. A community of practice is part of a larger social learning system that involves other communities and in which meaning is constructed through individual and collective experiences, and learning is viewed as a "social becoming"<sup>9</sup> (p. 182). Communities of practice are an important part of experiential learning. David Kolb<sup>10</sup> defines Experiential Learning Theory (ELT) as a "holistic integrative perspective on learning that combines experience, perception, cognition, and behavior" (p. 21), and learning is "a process of becoming a member of a community of practice"<sup>11</sup>(p. 200).

Findings of research studies investigating the reasons that undergraduate students switch out of engineering, barriers to persistence, and transition to employment or graduate school in the field support the need for universities to find ways to effectively foster professional identity development. For example, three ways in which the institution can foster identity formation as an engineer are: (1) program admission criteria, coursework, etc. (institutional identity), (2) co-ops and internships (self-identification through exposure to the norms and values held by professional engineers), and (3) communities of practice (recognition by other in-group members as a professional in the field)<sup>12,13</sup>. Co-ops and internships contribute to students' desire to become an engineer<sup>14</sup>, retention and work self-efficacy<sup>15</sup>, and higher starting salaries and the potential for a job offer by graduation<sup>16</sup>. However, "lack-of-belonging" has been found to be a predictor of switching out of engineering to a nontechnical major<sup>17</sup>, alienating disadvantaged students<sup>18</sup> and even high achieving students<sup>19</sup> from the engineering community. While there are many multi-faceted reasons that cause engineering students to leave the discipline, the "need-to-belong" plays an important role in identity formation and student persistence in engineering. Communities of practice offer opportunities for shared learning and relationship building. The research questions for our study were: (RQ1) What most-memorable experiences did student interns recall as a result of their participation in the program?; (RQ2) What value did community of practice activities hold for student interns?; and (RQ3) Were there any observed gendered or ethnic differences in how students experienced the program?

## **Value-Added Program Activities**

The Young Entrepreneur & Scholar (YES) program at the University of Central Florida (UCF) was created in 2008 with an S-STEM grant award from the National Science Foundation (NSF). Other grant awards from the U.S. Department of Labor, CareerSource Central Florida (the local workforce board), Florida's IT Performance Fund, UCF's Office of Research and Commercialization, and a second NSF S-STEM grant in 2014 provided additional resources to support and expand the program, the Career Advancement Mentoring Program for Young Entrepreneurs and Scholars (CAMP-YES). It is a two-year, cohort-based program. Participants in this sponsored program are academically talented STEM (Science, Technology, Engineering, Math) students in their junior year who have financial need. These are students with overall GPAs 3.0 or higher. The program aims to assist these students to graduate and to successfully transition into the workplace or graduate school. Students are placed in either a Research Path or an Internship Path according to their interest, and more recently, a third pathway was added to the program, the Entrepreneurship Path. Participation in the Internship Path ranged from one semester to two years. The students were recruited in cohorts for the Internship Path starting in 2008, but primarily in the later years, 2012-2014 cohorts. All Internship Path students were selected among eligible applicants from the College of Engineering & Computer Science. Research Path and Entrepreneurship Path students were not included in this study.

The program activities of interest to this study were the Socials, Distinguished Speaker Series, and annual Symposium, and what value students ascribed to these activities. Participants (students and mentors) in all three pathways, Internship, Research, and Entrepreneurship, attend each event. The intention was to create a community of practice encompassing the business world, academic world, and the three experiential learning pathways. Students in the three experiential learning pathways participate together in each of the following events. Each semester, the program holds a Social inviting current, past, and prospective students, faculty and industry mentors, and other program partners on campus. During the Social, the program director provides an overview of the program, upcoming activities, and deliverables. A mentor (industry or faculty) and a student are pre-invited to talk about their company or research project and overall experience in the program. The remainder of the time is left for socializing and networking. The Distinguished Speaker Series is held during the Fall or Spring semesters depending on the availability of the speaker. One speaker is a successful entrepreneur or corporate executive and the other speaker a distinguished researcher. Students attend this event. After the presentation, students have time to interact with the speaker and socialize with their peers. The culminating event each year is the program's annual Symposium. Students, mentors, institutional administrators, program partners, and the program's external advisory board are invited to attend. The external advisory board, typically 15 members, is comprised primarily of industry representatives. Each student presents the project they have worked on over the past year, and each student is evaluated by the advisory board members using a project rubric.

Portions of the day are also set aside for the advisory board to interact with the students to get to know the students better.

## **Methodology**

The research questions for our study were: (RQ1) What most-memorable experiences did student interns recall as a result of their participation in the program?; (RQ2) What value did community of practice activities hold for student interns?; and (RQ3) Were there any observed gendered or ethnic differences in how students experienced the program?

We used a case study approach in which the researcher searches for relevant patterns in data, aggregates the data into meaningful categories, and provides contextualized descriptions about the case<sup>20</sup>. A prior focus group with a small sampling of students in the program and anecdotal data in informal discussions with students revealed emerging themes on forming bonds with peers, mentors, and others within the program's community. This study provided a systematic way to investigate if this emerging pattern existed among a wider group of students in the program. During the Spring 2015 semester, we emailed 81 engineering, computer science, and information technology students who had or were still participating in internships in the program. Forty-five student interns completed the questionnaire. The respondent demographics were: 91% men, 31% under-represented minority group, and 29% first generation college students (defined as first in the family to pursue a baccalaureate degree). The primary researcher coded the data into categories of interest and wrote the three selected case study narratives based on the student responses to the questionnaire. A secondary researcher, a graduate student with a Master's degree in Marriage and Family Therapy and working on a second Master's in Social work, also coded the data independently. Both researchers then reviewed the data together for inter-rater reliability.

Students were asked to respond, in writing, to seven, open-ended questions: background story, reason for choosing the institution and the program, impact of the program, impact of the financial support provided by the program, plans after graduation, and best program memory as part of the program evaluation process. The question of interest related to the value-added program activities was the students' responses to "best program memory" (RQ1, RQ2). Prompts for "best program memory" were: "talk about working with your mentor, interaction with others in the program, etc." The prompts served as stimulants to recall types of most-memorable experiences. Woike's<sup>21</sup> study on the formation of most-memorable experiences suggests that implicit motives (such as sense of accomplishment or warm and close communication with others) are more likely to elicit an affective most-memorable recall. Moreover, goal-oriented decision making relies heavily on memory recall<sup>22</sup>. The remaining six questions provided further details for the descriptive case studies in this paper (RQ3).

## Results

**RQ1:** *What most-memorable experiences did student interns recall as a result of their participation in the program?*

Twenty-seven percent (n=12/45) of the respondents specifically referenced one or more of the three value-added program activities as a memorable experience: Socials, Distinguished Speaker Series, or Symposium. The annual Symposium was the most frequently mentioned event. Table 1 provides sample responses of these 12 students who named one or more of the three value-added program activities as their “best program memory.” Of the remaining respondents, 24% (n=11/45) referenced the relationship with their industry mentor as the most memorable experience; 44% (n = 20/45) referenced some aspect of their internship, primarily related to their assigned project (e.g., sense of accomplishment in successfully completing the project); and 4% (2/45) had just begun their internship.

**RQ2:** *What value did community of practice activities hold for student interns?*

Table 2 categorizes the sample responses (n=12) from Table 1 as values. These values were mapped to constructs derived from the literature review above contributing to engineering identity formation. The results support the purpose of communities of practice among participants who cited these program activities as a best “memory” – that is, learning is viewed as “a social becoming”<sup>9</sup> (p.182). Shared learning values and self-confidence were the most represented categories (Table 2). Positive experiences with shared learning can lead to increased confidence, feelings of belonging to the group, and a firmer commitment to the engineering identity. Conversely, negative experiences in shared learning can lead to decreased confidence, alienation from the group, and deactivation from the engineering identity. Since the question asked about the “best program memory,” there were no negative responses. The purpose of this study was to investigate which, if any, of the program activities promoted the goals of a community of practice. Additional research needs to be conducted asking students about the “worst program memory.”

**RQ3:** *Were there any observed gendered or ethnic differences in how students experienced the program?*

Table 3 shows the demographic profile of the respondents to the item “best program memory” by the three main categories: (C1) value-added activities for the community of practice (Socials, Distinguished Speakers, Symposium), (C2) relationship with the industry mentor, and (C3) internship project (e.g., sense of accomplishment). The relationship categories (C1) plus (C2) were the best memories for women and for first generation students. For under-represented minorities (Hispanics and African Americans), the representation for “best memories” was about the same in all three categories (C1 plus C2 compared with C3). These preliminary results suggest that activities that provide opportunities for meaningful interactions and nurturing experiences may have the most impact on women and first generation college students in

creating a welcoming environment to the engineering community. More research needs to be conducted with larger sample sizes.

Three case study narratives (case #s 3, 10, 45 from Tables 1 and 2) provide a richer context of students' identity formation as an engineer (Appendix A). These were students who reported (C1) as the "best program memory." The demographic profile of the three students was: 1 Caucasian female, 1 Hispanic male, and 1 African American male. Both male students were first generation college students. Table 4 shows a summary profile from the narrative of the three students. All three students had selected engineering as a major because of their love of math and science or fascination with how things worked. Congruent with theories on identity formation, variations in responses "how the program helped" and "best program memory" could be attributed to the fluid nature of identity formation, the extent to which they identified with engineering, and where they ultimately ended up. For example, all three students graduated with an engineering degree, but only one student (case# 45 "James") was motivated by the internship experience to immediately pursue a graduate degree in engineering. "Jane" (case# 3) is employed in her field, and "John" (case# 10) is a recent graduate applying to jobs in his field. The questions from which the case study narratives were derived did not ask students to view their experience through the lens of gender or ethnicity. The purpose of the questions was to view their experience as a successful student, not a certain type of student. For example, case # 45 "James" (see Appendix A) mentioned a lack of access to role models as one reason for joining the program. Perhaps, the internship experience, the value-added activities for the community of practice, and the financial support provided by the program may have helped to level the playing field irrespective of the student's background (the intent of the program). Additional research needs to be conducted in this area.

### **Limitations**

The data in this study may not be generalizable to a larger population such as in quantitative studies with large sample sizes. By its very nature, qualitative researchers seek to understand the environment from the perspective of those in it<sup>23</sup>. By collecting data via open-ended written questions, the responses were "in the own words" of the respondents. This allowed easier data collection across the 45 students who responded to the questionnaire while maintaining the authenticity of the respondent's perceived experience. The trade-off was less depth in the responses that could have been probed through one-on-one interviews.



**Table 1. “Best program memory” Related to Value-Added Program Activities**

Case No.	Sample Response	Socials	Distinguished Speakers	Symposium
3	<i>“My best YES memory was speaking at a (program) social. I got to talk about what the program did for me and what I do at my job.”</i>	X		
6	<i>“I absolutely enjoyed the symposium and reflecting back on the amount work I completed during my time with the program. It felt invigorating and reassured me that I picked the right major.”</i>			X
9	<i>“The interaction I have had with my fellow YES students at the YES Symposiums has been a great experience for me that I don’t think I’ll ever forget. Especially when I talk to students that are in different engineering disciplines and how they approach similar problems.”</i>			X
10	<i>“My best YES memories are just all the memories of the people that I have encountered through this opportunity. Such as the different students in the program from the Socials or speaker series, to meeting my mentor and various coworkers. I got along great with them and definitely felt that I was welcomed into the environment. The program has definitely offered me an experience, that I never thought I would have the opportunity to be a part of.”</i>	X	X	
16	<i>“My best YES memory takes place during my first year in the YES program at the annual symposium. I was able to meet and learn from many different faculty, students, and teachers. Presenting at the symposium about my internship was a challenge that I overcame with confidence. I am very glad I was able to have that experience because it helped me grow as a person, student, and a professional.”</i>			X
25	<i>“My best memory from the YES program was at the Intro symposium. I got to meet many students and many of the companies were interesting.”</i>			X
28	<i>“Apart from hearing the news that I had been matched with several companies, my best (program) memory would have to be on the day of the Symposium right after delivering an excellent presentation and answering the audience’s questions with authority. All of my practice and experience up that point had prepared me to walk off that stage with confidence.”</i>			X
33	<i>“The symposium was by far the best part of YES. It allowed me an opportunity to see others’ experiences in YES as well as voice my opinion on the program and my personal experience.”</i>			X
39	<i>“My favorite YES memory was the YES Social at the beginning of the semester. It was informative to hear the different speakers, and fun to network with interns from other companies.”</i>	X		
40	<i>“Best YES memory was socializing with the other YES interns at the Symposium and learning about the experiences they have had and how they compare and contrast to mine.”</i>			X
43	<i>“My best YES memory has to be the relief I felt once I presented in the Symposium. I was so nervous being it was my first major public presentation. The other interns and I worked so hard on the presentation that when we presented and saw everyone’s reaction we were so glad to see approval, especially from our mentors. I enjoyed being able to share what I was doing and see how my internship compared to the rest of the YES candidates.”</i>			X
45	<i>“My best YES memory was participating in the YES symposium. At the event we had the chance of hearing presentations from all of the other scholar and internship students as well as from a few of the mentors. Even though we focused the entire year on our own project, it gave us insight into what the other students worked on and their personal experiences. It gave small snap shots into a plethora of different topics that we were now aware of and more informed about and could choose to pursue later in graduate school or in industry.”</i>			X

**Table 2. Sample Responses Value Categories**

Construct	Value	Case No.
Self-esteem	Confidence	3, 16, 28, 43
Commitment	Confirmation of major	6
Need-to-belong	Relationships	10
Social Cognitive Theory	Shared learning	9, 25, 33, 39, 40, 45

**Table 3. “Best Program Memory” by Demographic Profile of Respondents**

Category	N	Male (N, %)	Female (N, %)	URM (N, %)	First Generation (N, %)
(C1) Socials, Distinguished Speakers, Symposium	12	10 (83%)	2 (17%)	3 (25%)	5 (42%)
(C2) Relationship with industry mentor	11	9 (82%)	2 (18%)	4 (36%)	3 (27%)
(C3) Some aspect of the internship project (e.g., sense of accomplishment completing a project)	20	20 (100%)	0 (0%)	6 (30%)	4 (20%)

Key: URM = Under-represented minority (Hispanic, African American); First Generation = First in the family to pursue a baccalaureate degree

**Table 4. Summary Profile of Three Students’ Narratives in Appendix A**

Categories	Case No. 3	Case No. 10	Case No. 45
<b>Gender</b>	Female	Male	Male
<b>Ethnicity</b>	Caucasian	Hispanic	African American
<b>First Generation</b>	No	Yes	Yes
<b>Why Engineering?</b>	Like math and science	Like math	Like tinkering
<b>How the program helped?</b>	Networking, writing resume, securing internship, giving presentations, paying for school and related costs	Mentoring, gaining work experience, rotating through departments, paying for school and related costs	Acquiring technical skills, learning about the running a small business, finding passion for a field, motivating him to pursue a graduate degree, paying for school and related costs
<b>Best program memory?</b>	Shared learning	Welcoming environment (need-to-belong)	Shared learning
<b>Graduated in engineering</b>	Yes	Yes	Yes
<b>Graduate school in engineering</b>	No	No	Yes
<b>Employment in engineering</b>	Yes	Recent graduate, applying to jobs	Yes

## Discussion

The extent to which an individual identifies with his or her future self may promote delayed reward behavior in the present that will benefit the future self<sup>24</sup>. For example, a student with a strong engineering identity may sacrifice time spent with friends and family and dedicate that time to study. The anticipated long-term reward is an engineering degree and a well-paying job in a highly respected field. This study adds to the body of research on identity formation by investigating the role of communities of practice in student interns' identity formation with the future engineer self. First, twenty-seven percent (n=12/45) of the respondents specifically referenced one or more of the three value-added program activities as a most-memorable experience: Socials, Distinguished Speaker Series, or Symposium. The annual Symposium was the most frequently mentioned event. Second, these students reported that participation in one or more of these activities was related to enjoyment in shared learning experiences, commitment to the major, confidence-building, and feeling welcomed into the community. Third, preliminary results suggest that activities that provide opportunities for meaningful interactions and nurturing experiences may have the most impact on women and first generation college students in creating a welcoming environment to the engineering community. The GPA requirement for students in our program are those with 3.0 or higher overall GPAs. Future research should investigate under-represented groups with lower GPAs who could benefit from a similar social learning system.

For co-operative and internship practitioners, our recommendation would be to provide opportunities (informal or formal) for students and professionals in the field to meet as a group. The event should have an agenda to stimulate interaction between groups. It has been our experience that students often feel intimidated in approaching the professionals, and professionals naturally gravitate towards each other. Some ideas are:

1. Partner with colleges or other campus units to leverage events that they are already offering, and request part of that time for co-op/internship students to interact with the professionals.
2. Have the co-op/internship students arrange their own socials with their industry mentors with the facilitation of the co-op office.
3. If the co-op office does not have its own industry advisory board, partner with the colleges to have access to their advisory board(s). Arrange a joint showcase day where students present their co-op/internship project to the advisory board and industry mentors.
4. Create an online forum so that interns and professionals can connect (e.g., LinkedIn program page).

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## **Appendix A: Case Study Narratives**

### **Case #3: "Jane"**

Jane is a female engineering major. She chose to pursue engineering because she had always liked math and science. She chose to attend UCF because it was in Florida, and it had a good engineering program. She participated in the program because she had wanted to do an internship before she graduated. The program helped her improve her resume, got her an internship, and taught her how to network and how to give presentations in front of small groups. The program helped her pay for her tuition, and she was able to use other scholarships for food and housing. Upon graduation, she planned on getting a full time job, then possibly in a few years pursuing a master's degree. Her best program memory was speaking at a Social; she got to talk about what the program did for her and what she did at her job.

### **Case #10: "John"**

John is a Hispanic engineering major and first in his family to get a bachelor's degree. Growing up, Math became his favorite subject, which was also the subject that he excelled in. He chose UCF because it was close to where he lived as he could not afford campus housing. He chose to participate in the YES program because it would help him advance his professional and academic career, build his resume, and provide networking opportunities. The internship helped him learn how to be a professional and work in an actual engineering environment. His mentor allowed him to rotate through different departments in the company to see what interested him the most. The program also provided many networking opportunities to learn about the different companies and the type of products and services they provide. The program helped him stay in school by providing financial support which he used for car payments, gas to go to and from school, and related costs. He could also pay for textbooks and other essentials for classes. It also helped lower his overall student loan debt. Upon graduation, John is considering employment in the field or staying at the institution for a master's degree in his engineering major. His best program memory was related to the people that he encountered through this opportunity, the different students in the program from the Socials and Speaker Series, and his mentor and various coworkers. He got along great with them

and felt as though he was welcomed into the environment. John feels that the program definitely offered him an experience that he never thought he would have the opportunity to be a part of.

#### **Case #45: “James”**

James is an African American engineering major and first in his family to get a college degree. As a child, he tinkered around and took things apart and put them back together again. He chose to attend UCF because it had a great engineering program, but also because there were a lot of area companies ranging from large engineering firms to small start-up companies where he could get a job upon graduation. He chose to participate in the program because it was geared towards helping him find out what to do with his degree post-graduation. He knew he wanted to be an engineer but had no idea what that entailed and what options were available to him. Before joining the program, he had no idea about his future plans after graduation. As a first generation college student, his parents had trouble advising him on furthering his education by attending graduate school, and he did not personally know any engineers that could give him insight into the industry.

His internship taught him a lot about the nature of running a small business, and it also allowed him to learn new technical skills that he was able to use later in his senior design project. The tasks assigned to him in his internship were hands-on and gave him a taste of what it would be like to be a design engineer. He felt, however, that he did not have enough technical expertise to be an effective design engineer. Therefore, upon graduation, he decided to get a master’s degree in this field. It was a field that he had never heard of prior to his internship in the program. Without his internship opportunity, he would never have discovered how passionate he was about this specialty field. He would never have continued on to graduate school to further his education in this area, and ultimately would not have ended up working in this area.

The program helped him out a great deal financially. His parents could not afford to pay for his tuition, so his only options were scholarships, student loans, or getting a part time job. He wanted to avoid taking out student loans. The issue with getting a part-time job was that it would be very time consuming, and he knew it would distract him from his school work. The financial support provided by the program allowed him to continue to focus on school and reduce his anxiety about paying his tuition, while interning at a company that furthered his experience and knowledge in his degree field. Upon graduation, he went to an out-of-state university where he completed his master’s degree, with a focus on the field he was introduced to during his internship. He is currently working as an engineer, in the field he loves, at a large engineering corporation. He does not think he would be where he is if it were not for his internship.

His best program memory was participating in the YES Symposium. At the event, the students had the chance to hear presentations from all of the other research scholars and internship students as well as from a few of the mentors. Even though they had focused the entire year on their own projects, it gave them an insight into what the other students had worked on and their personal experiences. It gave small snap shots into a plethora of different topics that they were now aware of and more informed about and could choose to pursue later in graduate school or in industry.