The Value of Participating in Cooperative Education

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THE VALUE OF PARTICIPATING IN COOPERATIVE EDUCATION

A dissertation
presented in partial fulfillment of the requirements
for the degree of Educational Doctorate
in the Department of Higher Education at
The University of Mississippi

by

MEGAN UPCHURCH MILLER

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ABSTRACT

The benefits of experiential education are well known and a popular discussion topic on college campuses. The value of participation in a co-op work experience is recognized by employers, but not necessarily by the students they are hoping to hire. This study sought to determine whether or not students who did participate in a co-op found their experiences to be beneficial to their personal or professional growth.

Survey responses from students who completed at least one work term as a co-op student through the University of Mississippi School of Engineering were used in this study. The surveys were collected as part of the cooperative education class managed by The School of Engineering Dean’s Office.

The study found that students did perceive co-op as a beneficial experience and an asset to their personal and professional development. In addition to student development, survey results offered suggestions for continued improvement of the University of Mississippi Co-op Program. Results from this study can be used to make continued improvements to co-op policies and practices within the School of Engineering as the co-op program grows.
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Manuscript 1: Identifying the Problem of Practice
As the American workplace evolves, the American worker must evolve with it. How are colleges and universities evolving to better prepare students to enter the workplace? Do students understand that a college degree does not necessarily guarantee a private office and a career with benefits? In addition to academic credentials, students must learn about office culture, be prepared to communicate effectively with supervisors and co-workers, and understand that the absence policy they enjoy as an undergraduate will not be as flexible in the “real world.” Drexel University President, John Fry, believes that co-op programs can assist in bridging the gap between the college classroom and the world of work (Fry, 2014). The Drexel University College of Engineering reports that as many as 98.7% of students participate in co-op each year (Drexel University College of Engineering, n.d.). Co-op participation at Drexel is a priority for not only the School of Engineering, but also the institutional leadership.

Fry acknowledges that improving co-op practices across higher education will take time and, eventually, money. However, with the growing demands of parents and students to provide a greater return on investment from colleges and universities, campus administrators should invest in co-op programs. Offering classes more frequently, assisting students with professional development before beginning a co-op, and supporting students when they return are vital to the success of co-op programs and ultimately the success of today’s colleges and universities.

COOPERATIVE EDUCATION AT THE UNIVERSITY OF MISSISSIPPI

Employers are interested in hiring students with valuable real-world work experience, especially those students who have participated in co-op. Northwestern University’s McCormick School of Engineering defines a co-op as “an educational program which allows engineering
students to alternate periods of academic study with full-time periods of paid work experience related to their academic and professional goals (Northwestern University, n.d.).” Engineering students at The University of Mississippi (UM) participate in cooperative education (co-op) experiences less frequently than their peers at similar sized state institutions. According to their Co-op and Internship Annual Report, 515 Mississippi State University Engineering students participated in a co-op during the 2018-2019 academic year compared to only 40 students at the UM. The policies and requirements for participating in a co-op through the UM were updated in Fall 2017 to make participation easier and more affordable, but additional institutional support is necessary to increase the number of participants in the School of Engineering’s Co-op Program.

Co-op participation is not required for any of the ten undergraduate engineering programs at The UM School of Engineering, but they are paid opportunities that can provide students with additional funds to finance their education. Companies often provide a competitive hourly rate and assist with relocation and living expenses while students are participating in co-op. On average, co-op students from the UM School of Engineering earn $19 per hour in addition to housing expenses. These students work in their desired field and gain real world experience as an engineer. Although the number of students participating in co-op each semester has increased, the rate of participation is not comparable with similar sized state institutions.

Until 2015 there was no formalized co-op “program” within the UM School of Engineering. There were policies related to co-op participation, but enrollment in a co-op course and co-op grade assignments were handled on a case-by-case basis. This resulted in significant differences in expectations between the School of Engineering’s academic departments. While some students were expected to check in with their instructor weekly, others were asked to prepare a final report and presentation, others had no assignments beyond meeting with their
instructor at the conclusion of the semester to discuss what they learned. These inconsistencies could result in confusion and discrepancies during the school’s re-accreditation process with the Accreditation Board for Engineering and Technology (ABET). In order to create a uniform program, the Dean’s Office took ownership of the cooperative education program and the classes associated with co-op (C OP 300, 301, and 302).

In early 2017 a prominent alumnus and donor requested that the School of Engineering consider making changes to the co-op model at the time. It was his request that the UM program align more closely with the programs at similar state institutions. Once these changes were made, his foundation made an endowed gift to the School of Engineering to provide funding for the co-op program as well as scholarships for freshmen and transfer students from the state of Mississippi. With continued co-op growth, it is possible that there will be additional funds available from this donor. This donor’s goal is to keep engineering talent in Mississippi. He believes that if students have the opportunity to co-op in Mississippi before graduation they will be more likely to accept full time jobs within the state and curb the “brain drain” Mississippi is currently fighting.

Although the School of Engineering provides some resources to assist students in finding a co-op position, it is ultimately the responsibility of the student to apply for positions and negotiate the terms of their position if the company extends a formal offer. Once a student has secured a position, the School of Engineering Dean’s Office will request verification of employment and enroll the student in C OP 300. Once the student is enrolled, the Financial Aid Office is contacted to put that student’s financial aid on hold while he or she is participating in co-op; any awards the student has received will be available when they return for a standard academic semester. The Registrar's Office updates the student’s status to Full Time Equivalent
(FTE) making the student eligible to use on campus facilities including the South Campus Recreation Center, University Health Services, and the University Counseling Center. They also have access to buy student athletic tickets. FTE status allows students to defer payment on any student loans while they are participating in co-op, and will keep them in good standing with their parents’ health and car insurance policies. The Office of the Provost provides a scholarship to cover tuition costs and non-resident fees for students enrolled in C OP 300. While enrolled in C OP 300 students pay only a course fee of $65 each semester as well as a prorated capital improvements and student activities fees (usually around $10 each semester). The course fee is used to manage the co-op program and fund Dean’s Office site visits to co-op students throughout the semester.

The UM School of Engineering has faced challenges in recruiting students to participate in co-op for various reasons. Students may not see the value of participating in a co-op when their anticipated graduation date will be delayed by one full year. Faculty members are often not aware of the benefits of co-op participation and do not always encourage students to pursue these opportunities. In addition to the delayed graduation date, students assume that there will be some financial costs associated with participation in a co-op. Although the cost of co-op is now only $75 per semester, students assume they will lose scholarship money and be required to pay tuition for the C OP course. The School of Engineering and its individual academic departments could do a better job of communicating the benefits and importance of participating in a co-op. There are a few departments that advocate for co-ops and strongly encourage their students to participate, but other departments rarely mention co-op opportunities in their classes and departmental meetings. Each semester the School of Engineering hosts an on campus career fair with companies specifically looking to hire engineering students. In past semesters, less than
25% of engineering students have attended these fairs. This Engineering, Manufacturing, and Technology Career Day is the ideal time to find a co-op position. However, not all departments see the value of student participation and many hold classes during the event each semester. Additional support from department chairs and faculty members could improve participation in career fairs, increasing student exposure to co-op positions.

Students might also feel pressure from parents and family members when considering a co-op position. Parents can be wary of the idea that their student is “taking a year off” from regular academic coursework, worried that their student might struggle to readjust to academic expectations after a semester or more in the working world. Parents also have concerns about the students’ financial aid status and the risk of losing scholarship money.

In addition to these concerns, there is a lack of a co-op culture within the school. Students tend to be interested in the experiences of their peers--with fewer students participating in co-op, there are fewer students to share about the benefits of a co-op with their classmates. Due to the relatively small size of the UM School of Engineering, there are also constraints related to course sequencing. With around 1500 students, there are many required courses that are only offered once each academic year. Since students have limited opportunities to take classes in the correct sequence, choosing to co-op for only one semester rather than a full year can result in difficulty enrolling in credit bearing classes. Students are encouraged to seek out co-op opportunities that guarantee either a full academic year or a full calendar year of employment. However, some companies only make co-op offers on a one-semester basis.

The School of Engineering is 75.5% male and 24.5% female, and 52.2% of students are in-state residents. Of the nearly 1500 students enrolled in the School of Engineering, 73% identify as white. The companies recruiting new hires, interns, and co-op students from the UM
School of Engineering are primarily in-state companies or companies with locations in the Southeastern region of the United States.

Since 2016, the number of students participating in a co-op has doubled to include 28 students from various engineering disciplines. Co-op participants are primarily male (78%) and in-state residents (83%). Most of the companies employing co-op students from the School of Engineering are located within Mississippi (93%). Students typically complete a co-op as an undergraduate student—usually following their junior year of coursework; however, there is an occasional graduate student participant, which presents another set of unique barriers and challenges.

POSITIONALITY

When this data was collected, I was employed as the Career Planning Specialist for the School of Engineering and the coordinator of the cooperative education program. In this role I oversaw career development for students from all disciplines within the School of Engineering. This role included coordinating on campus recruiting events, assisting students with resume development, and building relationships with partner employers in and around the region. My current role encompasses career planning in addition to student programming and undergraduate student development. I remain the coordinator for the cooperative education program and will continue to oversee the growth of the program for the foreseeable future.

Throughout my undergraduate and graduate studies, as well as my professional roles, I have had various experiences with experiential learning. As an undergraduate student I studied Secondary Education, and participation in a student teaching experience was required in order to graduate and receive licensure from the state. Student teaching was part of a course, and students received no compensation for student teaching. Participation in that semester-long
experience was a crucial part of my decision to change my career path and enroll in graduate school. My experience as a student teacher was vastly different than the experience of many of my peers. I worked with a teacher who was near retirement and less than enthusiastic about her job. Students in her classes shared her lack of enthusiasm which made for a challenging semester. My placement was also in a 12th grade level class, meaning my students were only a few years younger than I was. Finding the balance between relatability and authority was nearly impossible. My roommate, on the other hand, worked in the same school also teaching 12th grade level classes with a teacher who was incredibly passionate about teaching. She also taught AP and advanced classes, and many of the students she taught were excited to learn and willing to participate in classroom discussions. It is likely that I would have chosen the same career path regardless of my student teaching experience, but it is interesting to contrast two very different experiences within the same high school.

As a graduate student pursuing a Master of Arts in Higher Education and Student Personnel I was required to complete a set number of practicum hours with an office on campus. In addition to coursework, it was required that all students work in two different offices before graduation. This was another unpaid experience, but it did provide exposure to different offices within the University and their functions on campus. One of my practicum placements was with the Director of Student Activities and another was in the Career Center working as a Graduate Assistant. These experiences provided insight into what it would look like to work as a professional in one of these offices or a similar office on another campus.

Following graduate school, I worked for the UM School of Pharmacy, which requires that students participate in multiple experiential rotations during their final year of the program. These experiences must be at different types of pharmacies, and student placements
are determined by the school. Students often receive job offers from these experiential rotations, but the rotation positions are unpaid. Throughout rotations, pharmacy students have the opportunity to experience different pharmaceutical settings and begin to narrow down their career choice. Pharmacy students might realize throughout this process that they are more interested in working in a hospital rather than in a retail setting. For many students, this year of rotations determined whether or not they would continue their education through a residency program or enter the workforce. Within the School of Pharmacy, students view these placements as a privilege, and they work hard to earn the grades and faculty recommendations required to be placed in the most desirable rotations. These rotations serve as hands-on training, and pharmacy students are excited to put their training into practice.

These experiences with different types of experiential education have shaped my personal views on student participation in co-ops. I have seen firsthand how some experiences can be more beneficial than others. Supervisors, work environments, and even co-workers can influence how valuable a specific experience can be for students. I assume that all co-op experiences will be somehow beneficial, even if they demonstrate to a student that a particular field might not be the best fit.

My role within the School of Engineering includes managing the co-op program. Since transitioning to this role in January 2016 I have seen the co-op program grow and have worked closely with school and campus administrators to make policies more beneficial to students. In addition to lowering the cost of participating in co-op and making it more accessible to all students, there have been significant curriculum and policy changes that benefit the student as well as the School of Engineering. By providing students from all departments with a similar co-
op experience, the School of Engineering can better demonstrate learning outcomes from co-op participation.

As the Career Planning Specialist and in my current role with the School of Engineering I oversee the administrative pieces of the co-op program, including course enrollment, scholarship disbursement, and ensuring students are coded as “FTE” for the purposes of loans and student insurance coverage. I also work on the academic side of the course, giving assignments for students to complete throughout their work semester and maintaining a record of student experiences during the co-op work term.

The purpose of this study is to evaluate students’ perception of their co-op experiences. If co-op participation is deemed valuable, increased participation could lead to higher starting salaries and greater job satisfaction in full time roles among co-op students. Demonstrating student satisfaction within the cooperative education experience could encourage more students to participate.

I assume this study will show that students find their co-op experiences to be highly valuable, and I have seen the benefits of co-op participation. Students return to the classroom more mature, with an understanding of how the professional world functions. Typically, students who participate in a co-op have no problem finding a full time job following graduation.

I also assume that co-op participants will have more job offers than their classmates who have little to no relevant work experience prior to graduation. Based on my experiences these students are more driven to succeed in their field and are eager to take advantage of any available professional development opportunities.
Student participation in co-op has increased slightly over the last several semesters, but there are not enough students interested in a co-op to meet the demands of employers. I believe a shift in the culture within the School of Engineering to make co-op participation an expectation rather than a recommendation would increase the number of participants. Although requiring a co-op for all students is not feasible within the School of Engineering, it is reasonable to assume that with increased departmental support and awareness, more students would consider pursuing and accepting a co-op position.

In addition to increased student awareness of the benefits of co-op, it could be assumed that increasing parent and family knowledge of co-op would encourage students to pursue co-op positions. Some students feel as if they must complete a degree in four calendar years. The pressure from parents and families to finish a degree program in the shortest amount of time possible can discourage students from participating in co-op.

Until recently, students were charged full tuition while participating in co-op. Rather than using co-op as a way to gain professional experience and save money, students were either breaking even at the end of each semester, or increasing their existing student loans to cover the costs of participating in co-op. Students also received varying responses from the Financial Aid Office regarding their standard eight semester awards. Some Financial Aid advisors understood the co-op system and could re-assure students that their awards would be protected and reinstated upon their return. Other advisors were misinformed and told students that their financial aid awards would be in jeopardy, and they would need to file an appeal upon their return in the hopes that their awards might be reinstated. Not surprisingly, this response dissuaded some students from participating in co-op. The risk of losing financial aid—several thousand dollars in some cases—was not worth the benefits of co-op participation.
I assume that many students do not consider or pursue co-op positions because they do not understand the value co-op can add to their resume and professional experiences. Students also do not completely understand the process of participating in co-op. There are many students who believe co-op participation will cost them more than they are willing to give—either in time or in potential loss of scholarship funds. Increasing student awareness about co-op is vital to the success of the program.

**EQUITY, ETHICS, AND SOCIAL JUSTICE**

Throughout the process of identifying the Problem of Practice, I have realized that not all campus administrators feel strongly about a cooperative education program. Most can agree that experiential education is invaluable to students from all disciplines, but there is little consensus across campus on how to best require or encourage these experiences. Is the institution doing enough to make cooperative education experiences accessible to all students? Each academic school has their own requirements, structures, and policies for experiential learning; but as an institution are we utilizing best practices in terms of co-op policies and administration? Do the current costs associated with co-op provide students with the same opportunities regardless of socioeconomic status? By making cooperative education more accessible financially, more students will have the opportunity to participate in the program. The value of participating in co-op could lead to an increase in employment rates among graduates and will improve the starting salaries of these graduates (Wessels and Pumphrey, 1995). In addition to adding qualified candidates to the workforce, co-op participation could also lead to younger donors who will support the institution financially and otherwise. Increased student participation will lead to more company engagement on campus and hopefully, additional full time job offers.
The School of Engineering is dedicated to providing students with quality experiential learning opportunities prior to graduation. However, there are policies that are mandated by the Office of the Provost that cannot be changed within the academic school or department. For example, the School of Engineering cannot choose to make co-op a tuition free course like other institutions. To remedy this problem, the Office of the Provost agreed to provide a scholarship to cover the cost of tuition and non-resident fees. This agreement is only applicable to undergraduate students during the fall and spring semesters. In Summer 2018 a special provision was made to cover international students participating in summer co-op experiences. Domestic students can work during the summer months without being enrolled in a class; however, for international students to gain work authorization while in the United States on a student visa, they must be enrolled in a credit bearing course that is an integral part of their degree program. As the program grows, it would be beneficial for the Office of the Provost to consider additional support of graduate students and domestic students interested in participating during the summer term. This increased access to co-op opportunities would benefit both the student and the institution as well as employers and company partners.

Continued support of the cooperative education program through policy updates and continued financial support from the Office of the Provost will allow the program to expand and serve more students. The Financial Aid Office has provided additional support by researching Federal Aid options for students participating in co-op and making that aid available to students. As the program grows, the School of Engineering will begin graduating more highly qualified engineers ready to enter the workforce. Graduating qualified engineers will provide students with higher starting salaries and greater job satisfaction. Additionally, it will grow the public perception of the UM School of Engineering within the state and region.
Making co-op more affordable will make co-op participation more equitable. By removing barriers, students from all socioeconomic backgrounds will have the opportunity to work and make money while also gaining valuable work experience. As students complete co-op assignments they will share their experiences with classmates, and hopefully encourage others to take advantage of all co-op has to offer.

In previous years, participating in a co-op was costly for students. Non-resident students could be charged up to $3,000 each semester they were on co-op, significantly decreasing their take home pay. While on co-op a UM engineering student typically earns around $12,000 per semester. The $3,000 tuition payment would account one quarter of the student’s earnings from the semester. Eliminating the high cost of participation was one step in making co-op more accessible to all students. By increasing awareness of co-op opportunities and dispelling the myths surrounding the process of participating in a co-op, the School of Engineering can increase co-op participation among students.

**CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW**

**Experiential Education**

Experiential learning has been defined as “learning in which the learner is directly in touch with the realities being studied. It is contrasted with the learner who only reads about, hears about, talks about, or writes about these realities, but never comes into contact with them as part of the learning process” (Keeton and Tate, 1978). Student participation in experiential education varies among disciplines and academic programs. Teacher education programs and healthcare related programs typically require some amount of experience before graduation. Disciplines such as business and accountancy encourage students to pursue
internship experiences, but do not require experience in order to complete program requirements.

John Dewey argued that “experience” has both an active and passive element. The trying of something new combined with the consequence will impact how one acts or reacts to a similar situation in the future (Pring, 2007). Learning from experiences in the workplace is a key component of a successful co-op experience, and both the student and the supervisor should ensure that learning is taking place after both positive and negative experiences. Dewey is known for his writing on experiential education. In addition to advocating for positive experiences that provide opportunities for growth, he also warned against “miseducational” experiences that could hinder the learning and growth process (Dewey, 1938). Miseducative experiences are those experiences that do not encourage continued growth or exploration. Educational experiences should leave the learner ready and willing to learn and grow more through future opportunities. This warning to companies and institutions is a reminder to assess programs and policies from year to year to ensure co-op relationships and experiences are mutually beneficial.

As educational systems and institutions of higher education have evolved to create more opportunities and provide expanded access for learners over the last century, there has also been a shift in teaching and learning methods. Administrators and instructors have looked for ways to “translate the abstract ideas of academia into the concrete practical realities” of students’ lives and careers (Kolb 1984). Kolb describes experiential learning, including field placements, as “empowering experiences” that can reinforce the ideas and theories learned in the classroom by providing real world experience and the opportunity to see what a career might be like before entering the workforce.
Kolb’s model for experiential learning has four primary components: concrete experience, observations and reflections, abstract conceptualization, and active experimentation. This model is dependent on the personal experiences of the learner. The second component of Kolb’s model allows learners to reflect on their experience and gives them a “reference point for testing the implications and validity of ideas.” In order to truly learn from an experience, Kolb suggests that one must do something with that experience and the knowledge gained--by active experimentation or testing what was learned in new or different situations.

Figure 1

Kolb’s Model of Experiential Learning (Kolb, 1984)

Kolb’s theory of experiential education fits within the context of cooperative education and this study in multiple ways. Successful cooperative education placements are rooted in quality, hands on experiences that enhance students’ classroom learning. As students progress through a co-op experience they should receive feedback from their supervisor about their performance as an employee and then implement that feedback into their work. This provides them with the opportunity to experience something hands on, reflect on that experience, then
work through ways to improve in the future. Co-op positions also provide students with a safe place to fail. In most instances, the mistake of a co-op student will not send the company into financial ruin. Excellent co-op supervisors allow co-op students to try new things and sometimes learn the hard way.

Work-based learning can and should complement classroom learning. Northeastern University’s Joseph Raelin (2010) writes about the value of “practice” from the educational perspective. He suggests that when learners run into something they don’t really know, they will search for a way to “learn themselves out,” even if that results in frustration. Individuals typically uncover some insight or have some realization that allows them to consider new possibilities.

In addition to the “practice” of education Raelin emphasizes the importance of reflection and the five key components of reflective practice. The social and collective piece of reflective practice is important since most work experiences involve others (co-workers, supervisors, clients, and customers, etc.). Although some reflection is introspective, Raelin calls for participants to look at all aspects of their work experience with a critical lens—including accepting some criticism from others. Kolb’s theory calls for observation and reflection as the second piece of experiential learning, but Raelin stresses the importance of “concurrent reflection.” Rather than reflecting on experiences after the fact, Raelin encourages learners to reflect in the moment and consider how to deal with unexpected scenarios and develop solutions (2010).

In considering the perceived value of participation in experiential education, it is important to consider additional factors that might impact student involvement and learning outcomes. Jeffs and Ord (2017) acknowledge the social aspect of experiential education, and
they point out that almost all experiences have some social component. Even seemingly individual events often result in a message sent to a supervisor or friend about the experience. The recognition of this social piece is especially important when considering why students participate in experiential education.

Faculty members might hope that students are choosing to participate in experiential education to grow their subject knowledge and gain hands on experience, but it is imperative to recognize that participation in experiential education, such as a co-op, will be seen by others. Jeffs and Ord (2018) point out that in many instances, individuals want to be recognized for their accomplishments. For co-op students, this acknowledgement could come from a faculty member, peer, or prospective employer. Keeping in mind the student’s motivation behind co-op participation is important when building policies for these programs.

**Cooperative Education and Internships**

As the costs of higher education continue to rise, participation in a co-op can contribute to tuition, living expenses, and more during academic terms. A 1998 study by Freeland, Marini, and Weighart suggests five key factors companies should consider when developing a cooperative education program. These factors include: competitive wages; understanding the difference between an internship and a co-op; providing an educational experience, often in the form of a dedicated mentor; working directly with the institution to ensure curricula match real world work scenarios; and demonstrating an interest in building and maintaining a long term relationship with the institution. They also recommend that companies and institutions be willing to re-evaluate their practices and policies as student populations change. Even well-established co-op programs can benefit from changes from time to time (Freeland, Marini, and Weighart, 1998).
According to a 2015 report, cooperative education is a partnership between a student, company, and academic unit meant to provide the student with practical experience in their field of study (Barry, Ohland, Mumford, & Long, 2015). Co-op experiences vary between institutions but generally require students to complete introductory coursework and meet other requirements before gaining approval to participate. Additional participation requirements might include a minimum GPA and approval from a department chair or advisor. The study surveyed cooperative education programs at seven institutions. Each of these institutions considered co-op an optional program and did not require any students to complete one before graduation.

In the state of Mississippi, participation in an approved co-op program can be used when students seek professional licensure. According to the state board’s website, up to six months of co-op work experience can be counted toward the Professional Engineering License awarded by the Mississippi Board of Licensure for Professional Engineers and Surveyors. This work experience is typically confirmed by the institution that granted the students degree and should be recorded on a transcript or another official document.

Student participation in cooperative education has been shown to increase employment rates among participants. Co-op participants were more likely to find a job in their field of study where they could apply skills learned in the classroom (Wessels & Pumphrey, 1995). Additionally, Wessels and Pumphrey also found that students who participated in co-op were offered higher starting salaries than their peers who did not participate in co-op.

Cooperative Education at The UM

The Cooperative Education Program at The UM is vastly underdeveloped. The institution was not listed in the most recent publication of the Directory of College Cooperative Engineering Programs (Hutcheson, 1996), although all other SEC institutions with Engineering
programs are included. In comparison to peer institutions, the UM Cooperative Education Program is behind in policies and procedures including co-op registration, costs associated with co-op and the prestige of the program.

Until 2015 the cooperative education program was coordinated through individual engineering departments. Since then, it has been centralized to the Dean’s Office and is managed by the Student Services division of the Dean’s Staff. One staff member is responsible for adding students to the appropriate course, administering the course, and working with other offices on campus to ensure students’ financial aid and full time student status are not in jeopardy during the semesters they are away on co-op.

Following the completion of a successful co-op, students should return to their academics with a new perspective on the curriculum and the ability to reflect on their co-op experiences and improve learning outcomes. The ability to evaluate experiences and make adjustments is an invaluable skill that will be beneficial in the classroom and the workforce. If students understand the value of this skill and recognize its connection to employability it is likely that co-op participation will increase.

**METHODOLOGY AND RESEARCH QUESTIONS**

This study was conducted using survey data collected through the School of Engineering’s co-op program. Students completed a survey at the end of each co-op term providing feedback on the co-op program, what they learned in their position, etc. Participants included students from five co-op terms including fall, spring, and summer semesters.

The institution is a mid-size, public, state university in the Southeastern region of the United States. The focus of this study was on the School of Engineering, which is made up of seven departments, ten undergraduate degree programs, and approximately 1500 students.
Graduates from the School of Engineering typically accept full time positions in the Southeast, and the majority of co-op positions are in the Southeast as well. Survey participants have all participated in at least one semester of full time co-op.

The survey included metrics to demonstrate the perceived value students gained from participating in a co-op. Surveys included demographic information including the name and location of the company, pay information, a rating scale to measure the students’ perceived value of the co-op experience, and several open ended questions asking students for additional feedback on their experience and how the program can improve.

Research questions considered in this study included:

1. Do students perceive their participation in a co-op experience as benefitting them personally and/or professionally?

2. Do students perceive their classroom experiences as adequate preparation for co-op positions and full time jobs?

CONCLUSION

In this study, I anticipate the results will show that participants value their time spent as a co-op student, but I do not believe classroom experiences are adequately preparing students for professional engineering roles. The final results of this study will be used to improve the policies and practices of the cooperative education program within The UM School of Engineering. As a result, the Dean’s Office can expect higher rates of participation in co-op from all School of Engineering departments.
List of References


Mississippi Board of Licensure for Professional Engineers and Surveyors. (n.d.). Retrieved September 14, 2020, from https://www.pepls.ms.gov/requirements


Manuscript 2: Findings
By early 2016 the Cooperative Education Program at The UM School of Engineering was in need of significant policy changes to make it more accessible for students. “Co-ops” were designed with students in mind, giving students the opportunity to work for a semester, save money, and pay for the upcoming semester of academic coursework. This model also allowed students to gain hands-on experience in their field and return to the classroom with a working knowledge of the concepts being discussed. In addition to the academic benefits for the student (a method to pay for school and on the job training), companies saw the value in co-op as well. Rather than meeting students upon graduation, industry leaders could build relationships with students throughout their college career. This mutually beneficial relationship could result in a pre-graduation job offer for the student and an already trained employee ready for the workforce.

Until early 2018 the UM School of Engineering co-op program cost students between $400-$3000 each semester in tuition. Students were also warned by the Financial Aid Office that if they left the classroom for any length of time, all of their financial aid could be in jeopardy. In addition to the financial stress, students also received incomplete or incorrect advice during academic advising. This inaccurate advising could lead to an additional semester (or more) spent working towards their degree. Because of the difficulties associated with participation in co-op, students have been hesitant to participate in the program and numbers are much lower than the number of participants at similar sized institutions.

Problem of Practice

Descriptive statistics based on existing data were used to determine the perceived value of co-op participation on students’ professional and personal growth and development. It also
surveyed whether or not students felt adequately prepared for co-op following their academic coursework with The UM School of Engineering. The goal of this study was to demonstrate to students and faculty the value of co-op participation and increase the number of students participating in the co-op program. As the director of the cooperative education program within the School of Engineering I would like to see policies continue to improve and make co-op more widely available to university students.

By updating policies to make co-op more accessible to students from all socioeconomic backgrounds, more students will have the opportunity to participate in the program and gain hands on work experience before graduation. Changing student perception of co-op and communicating the value of co-op participation will hopefully improve student involvement.

**Research Questions**

The primary research questions explored in this study are:

1. Do students perceive their participation in a co-op experience as benefitting them personally and/or professionally?
2. Do students perceive their classroom experiences as adequate preparation for co-op positions and full time jobs?

**Survey and Methodology**

The data used for this study was collected as part of a for-credit course through the UM School of Engineering. The course awards a pass/fail grade each semester upon successful completion of all assignments. Students were made aware that their responses to the end of the semester survey had no impact on their final grade in the course and seem to answer truthfully and sometimes critically. Responses were not required for any question on the survey, and final
grades were based on participation and completion of course assignments. Student responses and critiques are not examined until after the final grade has been submitted.

The survey was collected using Google Forms, and students have access to the link through their BlackBoard account during the final week of class. This was considered the final assignment of the semester for co-op students. This survey was created by the researcher in collaboration with professionals from the Dean’s Office in the School of Engineering. Since it was first implemented in Spring 2018, the survey has not been altered or edited.

The student survey is designed to allow students to provide honest feedback about their experiences as co-op students. It also collects data that can be used to inform future students about the co-op program including company information, pay rates, whether or not employers provide housing, etc. The survey uses a combination of open ended, multiple choice, and Likert scale questions to collect student responses. The survey results can be used to improve the co-op program or policies to fit the needs of students.

The data set includes surveys from six academic terms (Fall, Spring, and Summer) beginning in Spring 2018 and ending Fall 2019. A total of 58 students participated in the surveys. Students who participated in co-op and submitted the survey during multiple semesters will only have the most recent survey response included in the data. Students surveyed worked at 32 unique companies in 36 different locations within the United States and Germany.

Prior to Spring 2018 there was no formal method to gather feedback from students or track critical data. Data collected in this survey, including pay and housing benefits, could determine whether or not a future student would pursue a co-op position.

Demographic information was collected as part of the survey and was not considered when analyzing individual responses to survey questions. Students were also asked to respond to
several statements about their co-op experience. In addition to demographic information, participants provided information about pay, benefits, and living arrangements during their co-op experience. Questions were designed to measure the student experience as a young professional and their level of preparedness when starting their co-op position. Responses were given on a 1 – 4 scale (1-Strongly Disagree, 2- Disagree, 3-Agree, 4-Strongly Agree) with the option to select “Not Applicable” for all questions. Students were also asked how many different projects they worked on throughout their co-op and the estimated cost savings or profit for their employer. The final section of questions allowed students to respond openly to five different statements and questions.

**PRESENTATION OF FINDINGS**

**Demographics**

Participants included 58 students; 47 males (81.03%) and 11 females (18.97%) as seen in Figure 2, which is similar to the gender breakdown of the School of Engineering which is around 76% male and 24% female.
**Student Participation by Gender**

**Figure 2**

![Pie chart showing student participation by gender](image)

- Male: 81%
- Female: 19%

**Student Participation by Residency**

**Figure 3**

![Pie chart showing student participation by residency](image)

- Mississippi Resident: 54%
- Non-Resident: 22%
- International Student: 24%
Mississippi residents made up the majority of co-op participants (53.4%) while international students and out of state (non-resident) students made up 24.1% and 22.4% respectively (Figure 3). This does not as closely reflect the makeup of the School of Engineering as a whole. The School of Engineering residency breakdown is as follows: Mississippi residents – 51.9%; Non-residents – 33.4%; International – 14.8% (data retrieved from University’s data visualization tool, Tableau).

Student classification at the time of co-op was heavily skewed toward upperclassmen. Only 13.79% of co-op participants were sophomores during their co-op experience while 41.38% of participants were juniors and another 44.83% were seniors. This is to be expected because many companies expect students to have completed the calculus series and have some higher level coursework to be successful in their roles. The School of Engineering does not have class requirements to participate in co-op, but students must be in good standing with the school and have a GPA of 2.5 or higher. If a student does not have the required GPA, but has secured a co-op position, department chairs have the authority to approve a co-op with a GPA lower than 2.5.

The distribution of engineering majors within the co-op program is primarily chemical engineering (27.59%) and mechanical engineering (60.34%) students. Civil, electrical, general engineering and computer science make up the remaining 12.07%. Mechanical engineering is the largest department within the School of Engineering, and the chemical engineering faculty are the biggest proponents for student participation in co-op, which likely accounts for the consistent participation from those departments each semester.

Company locations (Table 1) were primarily in Mississippi and within the Southeastern region of the United States. This geographic distribution is representative of the companies who recruit on campus during the semi-annual career fairs and representative of the School of
Engineering student population. The employers who hired the most students to fill co-op positions include: Milwaukee Tool, BorgWarner Transmission Systems, Cooper Tire, Parker Hannifin, and Cooperative Energy. Students worked primarily, although not exclusively, in manufacturing facilities. One student worked for an orthopedic clinic and another worked as a researcher for a chemical lab in Pfinztal, Germany.

Table 1

<table>
<thead>
<tr>
<th>Company Location</th>
<th>Number of Participants</th>
<th>Percentage of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mississippi</td>
<td>40</td>
<td>68.97%</td>
</tr>
<tr>
<td>Alabama</td>
<td>2</td>
<td>3.45%</td>
</tr>
<tr>
<td>Arkansas</td>
<td>1</td>
<td>1.72%</td>
</tr>
<tr>
<td>Florida</td>
<td>1</td>
<td>1.72%</td>
</tr>
<tr>
<td>Tennessee</td>
<td>12</td>
<td>20.69%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>1</td>
<td>1.72%</td>
</tr>
<tr>
<td>Germany</td>
<td>1</td>
<td>1.72%</td>
</tr>
</tbody>
</table>

Geographical Co-op Company Distribution

Overall, the demographics of the co-op students included in this study adequately represent the student population within the School of Engineering. The findings of this study can be used to implement policies and update procedures within the Cooperative Education program.

Likert Scale

Student responses to questions about their co-op experience, level of preparation, and interaction with their supervisors and co-workers are detailed in the following figures and discussion.
Co-op Experiences and Their Relation to the Classroom Experience

Students reported their co-op work experience gave them the opportunity to put into practice what they previously learned in their classes and labs. Survey responses in Figure 4 showed that 91.23% of students agreed or strongly agreed that during their co-op, they were equipped to apply what they learned from faculty members in a professional situation. The remaining 8.77% of students who reported they did not have the opportunity to apply skills learned in the classroom could have been in a co-op position that was not closely aligned with the courses they had previously taken. This information should be taken into consideration by academic departments as new courses are developed and curriculum requirements are re-evaluated.

Responses were varied when asked if courses taken prior to co-op were beneficial in the workplace. The majority of responses (82.76% agreed or strongly agreed) indicated that courses did prepare them well for a co-op experience, but 12.07% of students did not agree (Figure 4).
These students could have received intensive on the job training that did not reflect previous coursework, or the processes and procedures used in their position might have been automated and not required any classroom knowledge to run daily processes. Although students are required to take and successfully complete courses such as differential equations as an engineering student, it is unlikely the student used course material from that class much, if any, during a co-op. Similar to accounting students, engineering students learn to do things the “hard way,” even though in the professional world they will rely heavily on computer systems and automation to solve equations and complex math problems. The students who were able to use their coursework likely used knowledge of computer aided design (CAD) software and knowledge of specific process and reactions as they relate to chemicals.

Due to technological advances, students probably did not use advanced math during their co-op. The School of Engineering does place a heavy emphasis on problem solving skills. While participating in co-op, students would have used problem solving skills and their experience working in groups and on teams.
Co-op Experiences Related to Professionalism, On the Job Training, and Feedback

As previously reported in the demographics section of the research, most participants were upperclassmen. Because of their classification, most of these students would have completed significant coursework related to their specific degree program, but likely would not have knowledge of industry standards or company specific policies prior to starting their co-op. While 94.83% (agree or strongly agree) of students reported they received on the job training for their co-op position, 1.72% disagreed and another 3.45% selected the “N/A” option (Figure 5). These outliers could be the result of several elements. If a company is small or does not have a formal new employee training program, the company might not see the value of a formalized training program for co-op students. Some companies might employ the “learn as you go” philosophy rather than implementing a standardized training program. Students might have also misunderstood the question as “on the job training” is a vague term that could be applied to any number of experiences. Depending on how “on the job training” is interpreted, it could range
from a formal training program to another employee explaining a process or demonstrating a specific task.

Overall, students reported that their supervisors provided feedback throughout their work experience (94.8%). The remaining 5.17% of participants reported they did not receive appropriate feedback from their supervisors (Figure 5). This could be due to a variety of factors including company culture, employee review schedules, etc. Since many engineering co-op students are treated as full time employees, the window for employee evaluations might not open during their time with the company. There might also be lack of feedback because the student was meeting or exceeding expectations. Company culture could dictate that feedback is only given if there are areas where an employee can improve or if there are problems that need to be addressed immediately.

With little exception, students felt as if they were treated like professional engineers during their co-op experience. As shown in Figure 5, students reported that they felt as if the work they were given was appropriate for their skill level and experience (98.28%). The remaining 1.72% of students did not agree. This could be due to a bad fit with the student and supervisor or company. If a student is in an industry that does not interest them they might be less enthusiastic about their work and less likely to completely buy in to company culture and opportunities for co-op students.
Figure 6

<table>
<thead>
<tr>
<th>Question</th>
<th>N/A</th>
<th>1 - Strongly Disagree</th>
<th>2 - Disagree</th>
<th>3 - Agree</th>
<th>4 - Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would recommend participating in a co-op to other School of Engineering students</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
<td>After completing a co-op, I feel that I am better prepared to enter the world of work as a full time engineer</td>
<td></td>
<td>0</td>
<td>2</td>
<td>16</td>
<td>40</td>
</tr>
<tr>
<td>The work I performed as a co-op student was challenging</td>
<td></td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>30</td>
</tr>
</tbody>
</table>

**Student Perceptions of Co-op Work Experiences**

Students reported that the work they were assigned in their co-op role was challenging which indicates they were placed in positions that aligned with their degree program and skills. It also shows that their supervisors and managers were confident in their abilities and skills to complete tasks that served the company mission. Students overwhelmingly indicated that they felt better prepared for the workplace after completing a co-op. The experience students gain during co-op gives them confidence as they complete their academic requirements and transition from student to professional. All participants indicated that they would encourage engineering students to participate in a co-op before graduation. As the school faces challenges related to student engagement and participation in co-op, this is an indicator that students can be the best champions and advertisements for continued participation in the co-op program. Student feedback will be discussed further in the Open Ended Responses section.

**Open Ended Responses**
When asked about the positive outcomes from participating in co-op there were five major themes that emerged: Real World/Professional Experiences; Pay/Making Money; Break from School; Networking with Professionals; and Improved Communication Skills.

Students reported that they gained real world experience during their co-op and were given projects that had a significant impact on the success of the company. One student reported that their co-op provided “real world experience” and gave them the opportunity to “learn how to take responsibility and lead/direct those under you even though they may have more experience.” Providing students with the opportunity to grow professionally gives them a glimpse of what their life will look like after completing and engineering degree. A student who worked in a manufacturing facility had this to say about their co-op experience:

Six plus months of engineering experience before graduation opens up doors that smarter people without experience often don’t have access to. [I got to] work in a corporate and industrial environment. Tons of responsibility and freedom. Not micro-managed ever. Given company card and computer. [Company name] got my passport expedited, and [I] got to visit Montreal. –Junior, Mechanical Engineering

The experiences co-op students have during their work terms cannot be matched in the classroom. Co-ops give students a realistic idea of what they can expect after graduation.

The financial benefit of co-op is especially attractive to many students. Another student reported that co-op provides “real world experience that looks excellent on a resume, builds confidence going forward in your career, financial benefit, [and] cultivates skills that cannot necessarily be taught in school.” Co-op positions pay a competitive hourly rate and are a way for students to save money to pay for an upcoming academic semester. Pay information was also collected in the student survey. The average hourly rate for co-op students participating in this
survey was $19.00 or around $12,160 each semester. In addition to a competitive hourly rate, some co-op companies provide corporate housing or a housing stipend to students who need to relocate for a co-op position. For students who are funding their college experience without assistance from family members or scholarships, a co-op is an effective way to gain real world experience and save money for an upcoming semester.

In addition to the financial incentives to participate in a co-op, students reported that co-op was a much needed break from the classroom and their regular academic schedule. Students reported that participating in a co-op was not only a nice break from homework, but an opportunity to apply the skills and techniques learned in the classroom in a real world engineering role. Although some students found the adjustment to an 8-5 schedule challenging, several reported that they enjoyed leaving work and not having any additional work or homework to take with them for the evening. Taking a step back from the classroom also gave students time to reflect on what they’ve learned and begin to narrow down what type of role they will pursue when applying for a full time job.

Co-op positions can greatly improve a student’s verbal and written communication skills. Professional communications need to be clearly written with enough detail and action items. Failure to communicate with your team or supervisor could result in significant loss of revenue for an employer. Co-op students are given real responsibilities and are expected to perform at the level of professional engineers, meaning the reports and emails written by a student could find their way into the hands of a company president or CEO. With this knowledge, students feel the pressure to hone their technical writing skills and learn to communicate effectively during their co-op.
The final theme that emerged from the data was the benefit of networking with other engineering professionals during a co-op. In addition to connections with their supervisors, co-op students built professional connections with co-workers, co-op students from different institutions, and the vendors and contractors their company worked with. Several students acknowledged that these lasting connections could eventually lead to a full time role with the company. In addition to networking within their company and location, some students had the opportunity to work with company representatives and clients from different companies within the same industry. Learning to build and maintain professional connections is a valuable skill that will benefit students throughout their career.

Table 2

<table>
<thead>
<tr>
<th>Theme</th>
<th>Student Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real World/Professional Experience</td>
<td>“a valuable learning experience that helps prepare for real world jobs”</td>
</tr>
<tr>
<td></td>
<td>“prepares young engineers for the real world”</td>
</tr>
<tr>
<td></td>
<td>“gained invaluable experience that will prepare me for work after I graduate”</td>
</tr>
<tr>
<td></td>
<td>“Learn how to take responsibility and lead/direct those under you… able to apply the knowledge you have learned.”</td>
</tr>
<tr>
<td>Category</td>
<td>Quote</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>“Up to a year of engineering experience under the supervision of an engineer.”</td>
</tr>
<tr>
<td></td>
<td>“learned problem solving skills and business skills”</td>
</tr>
<tr>
<td></td>
<td>“gain a better understanding of what you would like to accomplish as an engineer”</td>
</tr>
<tr>
<td>Pay/Making Money</td>
<td>“full-time pay with overtime”</td>
</tr>
<tr>
<td></td>
<td>“getting paid for my work was a huge bonus!”</td>
</tr>
<tr>
<td></td>
<td>“good pay”</td>
</tr>
<tr>
<td></td>
<td>“provides a competitive salary to help pay college and expenses”</td>
</tr>
<tr>
<td></td>
<td>“getting paid to do something you enjoy!”</td>
</tr>
<tr>
<td></td>
<td>“earn money to help you get through school”</td>
</tr>
<tr>
<td></td>
<td>“financial benefit”</td>
</tr>
<tr>
<td>Break from School</td>
<td>“switching back and forth from school to co-op helps student understand where we plug in what skills we learned in school”</td>
</tr>
<tr>
<td>Activity</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Networking with Professionals</td>
<td>“creating connections with employees and other fellow co-op students”</td>
</tr>
<tr>
<td></td>
<td>“great connections made with industry professionals”</td>
</tr>
<tr>
<td></td>
<td>“networking opportunities”</td>
</tr>
<tr>
<td></td>
<td>“exposure to corporate America, great way to meet senior engineers and form relationships with older people in a similar field”</td>
</tr>
<tr>
<td></td>
<td>“working with a team”</td>
</tr>
<tr>
<td></td>
<td>“possible to make friends and connections from a completely different background”</td>
</tr>
<tr>
<td></td>
<td>“developing relationships within the industry”</td>
</tr>
</tbody>
</table>

“no homework/studying for a semester”

“a nice break from the normal semester”

“time off from school to think about my future endeavors”
Improved Communication Skills

- “communication and technical writing skill development”
- “developing communication skills”
- “learn different skills which makes us ready for real full time job like project management, communication, responsibility”
- “learning proper teamwork/communication”

Positives of Participating in Co-op

Four themes emerged from student responses to the survey question “what are the negatives of participating in co-op?” The first theme was the delayed graduation date for students who participate in co-op. Due to the number of hours students work during a co-op, School of Engineering policy permits only one additional academic course during their co-op semester. This policy is to ensure students are focused on their work as a co-op student and not overwhelmed by attempting to be a full time employee and a full time student. Typically, co-op students complete all coursework in four years, but due to the time spent working as a co-op student, there might be five years between their first day as a freshman and the day they graduate with a degree. Although completing required coursework does not require any additional classroom time for students who participate in co-op, students are often a year behind their original cohort of classmates due to time spent away from academics. It is imperative that students understand that graduating in five years rather than four is not a hindrance to their
success. Unlike their classmates who complete a degree in four consecutive years, co-op students graduate with one year of full time work experience in their field.

The second theme related to the longer work days required for co-op students. Rather than a college student schedule, co-op students are expected to work business hours. In some cases this required students to make a longer commute than usual or be at work on a weekend or holiday. Although work days are longer and more structured, students do not usually have homework or responsibilities outside of the workday, unlike during a regular academic semester when students are expected to be in class and complete assignments outside of the classroom during their own time.

In addition to the time commitment of a co-op, students reported that another negative related to co-op participation was the adjustment period required of students. Students new to co-op must adjust to the work schedule of their employer, but when they return to campus they must re-adjust to life as a college student. Although a work schedule is much different than a student schedule, students can benefit from the workplace mindset. By working on schoolwork for eight hours each day, students should be able to stay ahead of their classwork and enjoy free time during evenings and weekends.

The final theme that emerged was that some students felt as if the work during their co-op was not related to their major or the classes they had recently taken. These responses were surprising because most of the co-op positions filled by students required a specific major for the role. Students did not feel that their classes were relevant for the work they were doing, but this could also be related to the fact that they received on the job or industry specific training when they started their roles. It is not likely students were using differential equations or thermodynamics on the job each day, but they were probably using critical thinking and problem
solving skills multiple times each day. These skills are key pieces of the School of Engineering mission and vital to the success of professional engineers. This question should be re-assessed before future use.

Table 3

<table>
<thead>
<tr>
<th>Theme</th>
<th>Student Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed Graduation Date</td>
<td>“takes longer to graduate”</td>
</tr>
<tr>
<td></td>
<td>“lose a year of school”</td>
</tr>
<tr>
<td></td>
<td>“removed from the students in our class”</td>
</tr>
<tr>
<td></td>
<td>“graduation date pushed back and classes might get out of order”</td>
</tr>
<tr>
<td></td>
<td>“miss a year of school”</td>
</tr>
<tr>
<td></td>
<td>“set me back a year or more”</td>
</tr>
<tr>
<td>Long Work Days</td>
<td>“early and long days”</td>
</tr>
<tr>
<td></td>
<td>“time consuming, but that is expected”</td>
</tr>
<tr>
<td></td>
<td>“long commute—being at work by 6 or 7am was tiring”</td>
</tr>
<tr>
<td></td>
<td>“the drive every day”</td>
</tr>
<tr>
<td>Topic</td>
<td>Comments</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>“8 hours a day, 5 days a week compared to class schedule. Not a big deal, but something to consider.”</td>
<td></td>
</tr>
<tr>
<td>“time away from family and friends”</td>
<td></td>
</tr>
<tr>
<td>Adjusting to Co-op / Re-adjusting to School</td>
<td>“returning to school is a challenging prospect”</td>
</tr>
<tr>
<td>“concerned about re-acclimating to the school routine”</td>
<td></td>
</tr>
<tr>
<td>“School = constant assignments; Co-op = contributing as much as possible to the team/projects”</td>
<td></td>
</tr>
<tr>
<td>“getting used to a new place for a short time.”</td>
<td></td>
</tr>
<tr>
<td>“long work terms will make for a period of readjustment back into school life.”</td>
<td></td>
</tr>
<tr>
<td>“coming back to school after a year might be challenging”</td>
<td></td>
</tr>
<tr>
<td>Work not related to classes or major</td>
<td>“hardly anything I did was related to classes I’m set to take upon returning”</td>
</tr>
</tbody>
</table>
“not related to my major—recruited to help with projects outside of my position.”

“stuck doing the work the other engineers don’t want to do”

“classes leading up to co-op were not necessarily used on the job”

“school does not prepare you for this co-op”

**Negatives of Participating in Co-op**

Students were asked to provide advice for future co-op students or students who were considering a co-op. These responses were insightful and provided information on what students would have liked to know before beginning a co-op. The advice provided to potential co-op students was overwhelmingly positive and rarely included any of the themes mentioned in the negative parts of co-op.

Do it! It will challenge you and not always be the most fun at times, but why would you not take a semester or a year to test out a career that you could have for the rest of your life? Even if you hate every second of it, you will gain the certainty of knowing that you don't want to pursue that career path, and if you love it, you will gain valuable experience that you can use to benefit your education and further your position post-graduation. But it's only a win-win if you have the right attitude about it. Be ready to learn and have your
ideas and presumptions about the particular industry changed. That is how growth happens. –Junior, Chemical Engineer

Just show that you're eager to learn. These companies know you aren't fully experienced and are not full time engineers yet. But if you show you're willing to learn, they'll teach you a lot about what's required to be a successful engineer. –Sophomore, Chemical Engineer

The co-op opportunity will give back what you put into it. The more you challenge yourself and make yourself a dependable member of the team, the more your team will grow to depend on you. The harder you work, the more recognition and responsibility will be given to you. –Junior, Mechanical Engineer

If you get an opportunity to work for one or more semesters, I would suggest to take that opportunity. Students with co-op experience have more competitive resume than other students when they graduate. Co-op gives you hands on experience with real-world job experiences and professional skills, which will create the practical foundation needed to gain entry to new job or graduation schools. –Senior, Mechanical Engineer

In addition to advice for future co-op students, the survey included a place for students to provide feedback for the School of Engineering. This feedback could be positive, negative, or include suggestions on how to improve the co-op policies and program. Again, responses were overwhelmingly positive and several would be easy to implement. One suggestion was to
promote co-op more through advising appointments. This will be key to growing the co-op program—making students aware of their options and helping them understand the value of taking a semester or two off to work in a co-op position. Several students asked that classes be available year round to allow co-op students to “catch up” if they only work one semester. Due to the size of the School of Engineering, this is more difficult to implement. As previously mentioned, one of the barriers to student participation in co-op is the perception that taking more than four years to complete a bachelor’s degree will have a negative impact on their professional experience. It is standard in co-op programs across the country that students who participate in co-op will graduate a year later than initially expected. Recommendations will be discussed further in Manuscript Three. Selections from the “Feedback for the School of Engineering” section of the survey are included below.

I appreciate the opportunity SOE has provided us to get this unique yet important opportunity while also providing [a] scholarship to cover the co-op tuition costs. This is a really big platform for our career and I am glad to have received one. I am happy with the SOE’s efforts to give students such opportunities and I look forward to getting some more in the future. –Sophomore, Mechanical Engineer

After working for a semester, I have realized that quality education is important but to [be] valued by employers, and to be considered [part of the] skilled workforce, experience matters the most. I think School of Engineering should introduce mandatory co-op/internship programs. Per that program, each and every student should have at least one internship in order to graduate. This motivates and trains student for the job/internship searching process. This program also put a pressure on Engineering
Administrative body to tie-up with different Engineering Firms and Facilities to recruit its student[s]. – Junior, Mechanical Engineer

Overall, students reported a positive experience during their co-op placements and would recommend that their peers also consider completing a co-op. Co-ops provided students with the opportunity to apply the knowledge learned in the classroom and hone their professional skills before returning to campus to complete their academic requirements. Although there are administrative challenges for students who participate in co-op, the School of Engineering is actively working to remove barriers and make co-op work experiences accessible to all students. Student recommendations were well thought out and though not all suggestions are realistic, the most common suggestions should be taken into consideration by School of Engineering leadership.

Conclusion

One of the challenges of this study is the limited amount of survey data. Students from this institution have participated in co-op for many decades, but without a formal process there is limited data available pertaining to the student experience. Until January 2018 there were not finite policies defining the co-op process and eligibility. Co-op “requirements” varied between department chairs and instructors, and there was little consistency in what differentiated a co-op from an internship, undergraduate research, or a special topics course. Although students had the option to participate in co-op, the barriers to maintain full time student status and protect scholarships were often too much of a risk for students. Improvements to the co-op program have eliminated some of the barriers, but there are barriers that remain.

The following manuscript will address future recommendations and conclusions for the co-op program within the School of Engineering.
List of References
The UM. (2020). *All campuses headcount enrollment (fall trends only) by residency.* [Data visualization]. Retrieved from

https://tableau.olemiss.edu/#/views/EnrollmentTrends/Demographics?iid=2
Manuscript 3:  Summary of Findings and Recommendations for Future Practice
Summary of the Problem of Practice and Local Context

The cooperative education program at The UM has not seen the success of other similar sized institutions in the same region. For many years the cost and inconvenience of participation kept students from pursuing co-op positions. In addition to the high costs, students also risked losing scholarship money or their good standing with the University. At the urging of several industry partners and some financial incentive, the School of Engineering started working to improve the co-op experience for students in late 2017. In an effort to increase participation the school made several impactful changes to the co-op program and worked with University leaders to improve student experiences. These changes included making co-op more affordable and eliminating the administrative hurdles facing students.

Due to the limited number of student participants in co-op, the co-op culture within the School of Engineering is virtually non-existent. At institutions with larger numbers of co-op students, word-of-mouth testimonies and urging from faculty members is enough to maintain and even grow a co-op program. However, at The UM, the co-op program could seem daunting and confusing to faculty members and students. With such a low participation rate, faculty members do not take the time to learn the details of the co-op program and cannot accurately advise students who are interested in pursuing a co-op.

The literature on cooperative education repeatedly shows the value of co-op and the benefits of student participation, including higher job satisfaction rates and higher starting salaries. In addition to the benefits for students, a strong co-op program can aide in the
development of institutional and industry partnerships. Similar institutions in the region report high participation rates in cooperative education programs, but the UM has struggled to grow its co-op program. Improving policies and providing students with better education about the benefits of co-op can increase co-op participation.

**Data**

The data used in this study was collected through a survey distributed to all co-op students at the end of their co-op term from Spring 2018 to Fall 2019. Data was interpreted blindly, and students were not penalized for their responses or lack thereof to any question. All assignments in the co-op course were graded for completion rather than content. If a student participated in any portion of the final survey they were given credit for the assignment. There were students who participated in co-op during multiple semesters. Those students’ most recent survey response was included in the data.

There are several limitations associated with this data. Since the formalization of the co-op program happened recently, there is a limited number of participants to survey. The survey was implemented during the Spring 2018 semester and data was collected through Fall 2019. In addition to the limited number of survey responses, students might have also felt pressure to complete the survey since it was part of the co-op course. Although students were encouraged to answer honestly and the class was a pass or fail course, there could have been some hesitation to answer truthfully. The survey was not anonymous, but responses were evaluated anonymously.

The survey was administered using Google Forms and collected during the final week of the academic semester, but not necessarily during the student’s final week of work. Since students can work beyond the dates of the academic semester, some might have several weeks or months left of work after completing the survey. Institutional data including School of Engineering
demographics was collected from data available through the UM’s Office of Institutional Research, Effectiveness, and Planning.

Additional limitations of the survey include the lack of follow up questions if a student did not give a complete answer and the lack of personalization based on industry or program of study. Students who worked in a design role might have very different experiences and responsibilities than their peers who worked in a primarily manufacturing position. In addition to different roles and industries, some students worked for small, family owned companies while others worked for large, international corporations.

Contextual Framework: Kolb’s Theory of Experiential Education

Kolb’s theory includes observation and reflection followed by the implementation of new ideas and improvements. When co-op students are given the opportunity to reflect on experiences they recognize the value of their work and identify areas where they can improve. If they are given the time and space to reflect during their co-op they can think critically and make adjustments to the work they’re doing on a daily basis.

The first piece of Kolb’s model is concret experience. Students reported throughout the survey that co-op participation provided them with the opportunity to gain “real world” and “hands on” experience in their field. These concrete experiences ranged from learning to communicate clearly and effectively with co-workers, problem solving in a manufacturing setting, and working with clients and customers from outside of the organization. Survey responses showed that during their co-op, 91.23% of students were able to use skills learned in their previous classes while on the job. These concrete experiences give students something to reflect on as they continue through Kolb’s model.
Survey results showed that as many as 94.8% of co-op students received feedback from their supervisor during their co-op work term. The second piece of Kolb’s model, observations and reflections, allows students the opportunity to reflect on the work they have done and process feedback they have received from others. Kolb suggests that adequate feedback leads to a continuous process of personal and professional growth and improvement. He cites Kurt Lewin who believed that “much individual and organizational ineffectiveness could be traced back ultimately to a lack of adequate feedback processes.” In order to combat this ineffectiveness, there should be a good balance between observation and action (Kolb, 1984).

As students move into the third phase of Kolb’s model, formation of abstract concepts and generalizations, they begin to develop new ideas and consider new ways to go about their daily tasks and responsibilities. Once they have received feedback students can test implications of concepts in new situations. The data collected in the survey does not clarify whether or not students were given the opportunity to process feedback and make improvements.

Kolb also discusses the importance of career adaptation. He compares an engineering graduate and a social work graduate from the same institution and follows their careers from the beginning. He notes that the engineering’s career progression moves from a heavily engineering and problem solving focused role to a managerial position that requires less “engineering” work and more people and business management. This transition requires the engineer to adapt and take on roles and responsibilities that are not a part of traditional engineering curriculum. The social worker, on the other hand, deals with administrative tasks and various management roles throughout his or her career and has to adapt less through career advancement (Kolb, 1984). Co-op gives engineering students the opportunity hone these “management level” skills as students, better preparing them for the working world and eventual career progression.
Students who complete multiple semesters of co-op have multiple opportunities to complete this cycle. In many cases, students who return to the same company for a second or third semester are given additional responsibilities and might be asked to assist in training new co-op students. If given the opportunity, students can use Kolb’s theory to improve their own experience moving forward and the experience of future co-op students.

Kolb’s framework could benefit from one addition, to share experiences with others. Although many students had a positive co-op experience, without prompting they may or may not share these positive experiences with their classmates. Students value the opinions of their peers, and by sharing valuable feedback, students can encourage their peers to pursue co-op positions. The school can better facilitate this step by providing students with the platform to share their about their experience and encourage their peers to consider a pursing a co-op. In addition to sharing their positive experiences with peers, students should share the co-op experiences with faculty members, department chairs, and advisors. The more individuals within the School of Engineering to advocate for co-op, the more the program will grow.

In addition to sharing information with and between students, the school can develop a mechanism to allow co-op supervisors to share feedback with the School of Engineering. A 2021 study in Melbourne found that employers from Work Integrated Learning (WIL) sites would prefer to give feedback to the institution in a more formal manner. These sites wanted more clarification regarding the “professional expectation” for students and a better understanding of the school’s process. The authors of this study and participants felt strongly that a better system of communication would improve relationships between work sites and the institution (Venville, A., et al 2021). This additional level of feedback would give both
employers and The School of Engineering the opportunity to implement pieces of Kolb’s model and lead to further improvement of the co-op program.

**Summary of Findings**

Overall, students had positive experiences in co-op. In addition to gaining hands on work experience in their industry, students reported that they sharpened their transferrable skills including professional communication and networking. During co-op terms, students were given the opportunity to meet professionals in their industry and build relationships with their co-workers and supervisors that could lead to future job opportunities.

While working as a co-op, students were treated as professionals and given real problems to solve and tasks to complete. Some students indicated that their projects were implemented long term and led to significant cost saving for the company. Several students reported that they felt as if they were given the same level of respect and responsibility as full time professional engineers.

In addition to developing transferrable skills and building professional relationships, students reported that participating in a co-op gave them the opportunity to make money while taking a break from academics. For students who are struggling financially, pursuing a co-op is a way to save money and supplement scholarships for future semesters. For the student who is burned out in the classroom and might be suffering academically, co-op gives students the opportunity to step into the professional world of engineering and see what they are working toward. Multiple students reported that after working in industry, they were inspired to complete their degree as soon as possible to get back to the workforce.

Although students recognized the benefits of co-op, they also reported frustrations with not being able to take classes out of sequence and the perceived negative impact of a “delayed”
graduation. Students understand when accepting a co-op that they will not complete their degree when initially planned, but these concerns came up multiple times throughout the study. After completing co-op, students commented on the return to a “college” schedule rather than the professional schedule they followed while working. The adjustment from working to academics came as a shock to some students—rather than leaving work at the office, classes require homework and assignments outside of the classroom. Strategies to ease this adjustment period and address student’s graduation concerns will be addressed in the Recommendations section of this manuscript.

Overall, student participants indicated that they would recommend a co-op to their classmates, despite their complaints and recommendations for improving the program.

**Research Questions**

This study aimed to address two key questions:

1. Do students perceive their participation in a co-op experience as benefitting them personally and/or professionally?
2. Do students perceive their classroom experiences as adequate preparation for co-op positions and full time jobs?

Based on Likert scale and open ended responses, students indicated that they did grow personally and professionally as a result of their co-op experience. In addition to gaining experience as an engineer, students reported improving their professional communication skills and growing their professional network. These are skills that might be taught in the classroom throughout the college experience, but are not put into practice in the same way they are in the workplace. Participating in co-op gives students the opportunity to hone these skills and see the importance of soft skills when working as part of a team.
Students did not all feel as if their classroom experiences prepared them for co-op, and responses were varied. Some students felt as if classroom learning was important and directly connected to the technical requirements of their roles, but other students did not feel the same. Overall, the School of Engineering aims to prepare students to be critical thinkers and problem solvers. Students might have interpreted this question literally, assuming that they would be using differential equations or thermodynamics in their day to day roles. Survey questions did not specify which courses or sequence of courses students might have used in their roles, but they could be updated in the future to give more specific guidance for students answering these questions.

**Improving Practice to Enhance Ethics, Equity, and Social Justice**

There are multiple improvements that can be made to the cooperative education program to enhance ethics, equity, and social justice. The University and the School of Engineering have already made great strides in making co-op more accessible to all students. By reducing the amount of tuition students pay to participate in co-op, barriers were removed for students from low income families or those who are dependent on scholarships and financial aid to pay their bills each semester. The assurance that scholarships would be protected until students return for an academic semester gives students the option to participate in co-op without putting their financial aid in jeopardy.

Although the full cost of tuition has been eliminated, there are other fees students are responsible for while on co-op. Eliminating these fees would allow students to save more of their co-op pay to put towards expenses in an upcoming semester. To eliminate these fees, the School of Engineering would need to work closely with the Greek Life Office, Office of International Programs, and other offices that assess fees to students who are enrolled, regardless
of whether or not they are enrolled in a full time course load and utilize the facilities and programs being funded by these fees.

Survey results indicated that students were incentivized to participate in a co-op or continue participating in a co-op because of the pay. One student specifically stated that co-op “provides a competitive salary to help pay college and expenses.” Although none were mentioned in survey responses, students might have additional financial obligations to fulfill while participating in co-op. In the Oxford-Lafayette community almost all home and apartment leases run for a full calendar year. The commitment to paying rent in two places could keep students from participating in co-op if they are hoping to save money while working. With limited engineering and manufacturing roles in the Oxford area, it is challenging for students to find roles that allow them to live nearby, and some are forced to either buy their way out of a lease or pay rent in two places while on co-op. Although some companies provide corporate housing for students, eliminating the additional cost, not all do. The school could work with an attorney to assist students in getting out of their lease while on co-op or provide one-time assistance for rent due in Oxford while a student is working elsewhere.

According to the National Association of Colleges and Employers (NACE) students who completed a co-op received and job offer at the rate of 72.2% compared to those students who did not complete a co-op or internship (36.5%). The study also showed that students who worked in paid co-op and internship positions were more likely to receive offers than their peers who worked in unpaid roles (NACE, 2016). All School of Engineering co-ops are paid positions and many students return to work for their employer full time after graduation.

By eliminating barriers to participation, students within the School of Engineering have more opportunities to engage in co-ops and expand their professional knowledge. Student exposure to
professional settings prepares students for the work world following graduation, and should lead to increased job satisfaction throughout their career.

Making co-op opportunities available and accessible to all students within the School of Engineering is imperative for the success of students and the continued growth of the co-op program.

**Recommendations**

A simple improvement to the co-op program would be to update the survey to collect more detailed and relevant information. There are questions that can be removed if they are not being used to improve the program. Additional questions that are more specific to a student’s department could be added to collect more detailed data related to student preparedness and learning outcomes.

Intended learning outcomes should be better explained to students participating in co-op. Rather than students feeling as if co-op is a good break from the classroom and a way to make money, they should be reminded that they are practicing professional skills and perfecting skills learned in the classroom. Several students indicated in the survey that the things they learned in the classroom were not implemented in their co-op. These students were likely considering what they learned from a textbook without considering the critical thinking skills and team work they developed through in class assignments and projects.

The survey used to collect data can be improved in several areas. In addition to providing further clarification on some questions, including the question about whether or not students’ classroom experiences prepared them for co-op. Hosting a focus group to further expand on the questions in the survey would give students the opportunity to share more details about their experience and give school administrators a place to ask follow up questions. In addition to a
focus group, a cognitive interview could be used to improve survey questions. Cognitive interviews allow researchers to address the same questions as the traditional survey, but also allow for additional questions and the opportunity to provide clarification or address any questions or issues the student might have. A final survey update would be to better link survey questions to the learning outcomes associated with co-op. By linking the desired learning objectives to specific survey questions, administrators can better determine whether or not students are learning the necessary skills.

Student survey responses indicated that co-op participants would like to see more flexibility in course offerings within the School of Engineering. This would allow students the option to work only one semester without falling “behind” the peers in their class cohort. Additional faculty members could teach courses over the summer to help students “catch up” with their classmates. Hiring additional faculty members comes with significant financial cost for the school and academic departments. This recommendation is one of the less feasible options presented.

It would also be beneficial to provide training for advisors working with students considering co-op. When students and advisors meet for advising it would benefit the student and the co-op program if advisors could advocate for co-op experiences. At present, most advisors do not fully understand the co-op program and may or may not understand the value of co-op participation. By providing adequate training for advisors and faculty members, students will have access to good counsel from multiple perspectives when considering a co-op position. Although training could be coordinated by the Dean’s Office, this will require full buy in from all engineering departments. A departmental endorsement of the co-op program is important to demonstrate the value of co-op on all levels of the school.
In addition to better preparing advisors, the School of Engineering can better prepare students before they begin their co-op. Training should include professional communication skills, what to expect in the working world, and transitioning from school to work. This could be a short afternoon training provided by the Dean’s Office once each semester before students begin co-op the following semester. In addition to an overview of what to expect in a professional setting, this training could include a brief overview of safety within the workplace—especially for those who will be working in a manufacturing setting or on a job site. This preparation program can be easily implemented and managed by the School of Engineering Dean’s Office. In addition to a stand-alone training event, professional preparation could also be incorporated into engineering curriculum and built into classroom expectations within each academic department.

As the School of Engineering works toward more Diversity, Equity, and Inclusion programming, adding data about race and ethnicity should be included in survey results. This data can be collected and added to the survey using the participant’s student ID number, it does not need to be added to the survey. These metrics can be used to better advertise co-op with different demographics. School administrators might also identify ways to better serve international students or certain populations by using this additional data. Including this information in survey results would aid the school in providing equitable access to all students interested in co-op.

The School of Engineering has recently hired a communications specialist to help the school and academic programs reach students, alumni, and prospective students and families. Her expertise in marketing and advertising can be better utilized to grow the co-op program and address the concerns of specific groups.
Finally, when students return from a co-op the School of Engineering can implement a re-entry program to assist students in the transition back to classroom learning. This would give co-op students the opportunity to get to know each other and share more about their common experiences from co-op. It would also provide a support group for those students who find the return to the classroom challenging. This suggestion would be easy to implement each semester and if students are interested in continuing meetings they could easily be sustained and managed by student participants.

As mentioned in Manuscript One, a School of Engineering donor has made co-op a top priority. With the support of this donor, the school can continue outreach and awareness efforts to encourage students to consider co-op. In addition to a marketing effort, the school can work closely with industry partners and representatives to build co-op partnerships for underrepresented students. By focusing on employers who have a long standing relationship with the School of Engineering and are committed to keeping talent within the state, the co-op program can grow and maintain growth.

Throughout this study, I have recognized the need to make co-op more accessible to all students. Although my role has shifted from primarily career planning efforts to now include additional student programming and activities, the co-op program has remained a top priority. Finding ways to make co-op more attractive and more available to students is more important than ever for the success of the program and the success of students. Demonstrating to all stakeholders the value of work experience prior to graduation is key to growing this program. In addition to sharing the findings of this report with students, they will also be shared with faculty and staff within the School of Engineering and career services professionals across campus.

Conclusion
Although the School of Engineering’s cooperative education program has not grown at the rate of other institutions, this study has provided insight on ways to improve the program for future students and co-op participants. The program has evolved significantly over the last decade, causing some confusion with faculty members and department chairs. A more consistent program has been implemented that should eliminate confusion within the school. In addition to improved policies, the cost of co-op has been significantly reduced and students can accept co-op roles without the fear of losing their scholarships or full time student status.

Data collected for the study will continue to inform policy decisions and can be used to create marketing materials for the co-op program. By addressing student concerns about participation on the front end, the school can guarantee students that participating in co-op will be a worthwhile use of their time. This data will also be used to make future improvements to the program and assist school and university administrators as they develop policies to serve all populations of students within the School of Engineering.

Kolb’s Theory of Experiential Education can be used to evaluate student experiences within the co-op program and be used to make improvements to the survey and overall student experience. This study sought to answer two questions:

1. Do students perceive participation in a co-op experience as benefitting them personally and/or professionally?
2. Do students perceive classroom experiences as adequate preparation for co-op positions and full time jobs.

Student survey responses indicated that they did feel as if participation in a co-op was beneficial for them as an individual and a professional. In addition to gaining hands on work
experience, they sharpened the transferrable skills that are necessary to be successful in the workplace.

Not all students agreed that classroom experiences provided adequate preparation for the working world. This could be due to a misunderstanding about what being “prepared” actually means, or there might be necessary improvements made to the engineering curriculum to better define workplace preparation. Although some faculty would disagree, students should be prepared for the workforce when they complete an engineering degree.

The co-op program has seen significant improvements over the last several years, but there are remaining improvements that can be made. In addition to improving awareness of the co-op program, the School of Engineering can continue to work towards increasing access for all students. By working closely with campus and industry partners, the co-op program can see continued growth and provide professional experiences for even more engineering students.

Throughout the writing of this study more research has been published on the topic of cooperative education and the value of student participation. The term “co-op” is used for a variety of work experiences, and is sometimes considered an “internship,” “work integrated learning,” “practicum,” or “externship.” It is clear that these experiences are valuable, regardless of the setting, student, or program of study; but there is limited research available directly related to smaller engineering programs. In addition to research, there are resources needed to grow a co-op program.

As the School of Engineering moves forward in developing policies and practices related to the cooperative education program, administrators should consult students as well as industry partners. In addition to updating this survey, in the future, co-op students will all be given the
opportunity to “debrief” with School of Engineering representatives to share their frustrations and celebrate their successes.
List of References


Appendix
Survey Questionnaire Used for Data Collection

The purpose of this survey was to collect data at the end of a co-op term. Students enrolled in co-op submitted this survey as a part of class requirements. Surveys were evaluated blindly and students were not rewarded or penalized for their responses.
Student Information

* Required

1. Email address *

2. UM Student ID Number *

3. First Name *

4. Last Name *

5. UM Email Address *
6. Major (please select your primary major): *

*Mark only one oval.*

- Biomedical Engineering
- Civil Engineering
- Chemical Engineering
- Computer Science
- Electrical Engineering
- General Engineering
- Geological Engineering
- Geology
- Mechanical Engineering
- Other

7. Classification *

*Mark only one oval.*

- Freshman
- Sophomore
- Junior
- Senior

Company Information

8. Company Name *

____________________________________________

9. City *

____________________________________________

https://docs.google.com/forms/d/1ohtbKJl5S22jERmB11Ul8hF3663-TxK0m0Gh75NNBlSs/edt
10. State *

Your Co-op Experience

11. How many semesters of full-time co-op (fall/spring semesters) have you completed? Do not include summer terms. *

*Mark only one oval.*

- [ ] One
- [ ] Two
- [ ] Three or more

12. NOT including housing or travel stipends, what was your hourly wage while working as a co-op? *

13. Did your employer provide housing, such as a company apartment, OR a monthly stipend designated for housing or living expenses? *

*Mark only one oval.*

- [ ] Company Housing
- [ ] Housing Stipend
- [ ] None of the Above

14. If your company provided a housing stipend (designated specifically for living expenses), how much was provided each month?
15. Did your company provide any of the following benefits for co-op students? Please check all that apply.

- [ ] paid holidays
- [ ] paid time off (besides holidays)
- [ ] participation in 401k, profit sharing, or stock purchasing
- [ ] stipend for moving costs associated with each work session
- [ ] medical benefits such as health, vision, or dental insurance
- [ ] paid overtime for hours worked beyond the standard work week
- [ ] employer reimbursed co-op fee or the cost of additional courses taken during co-op term
- [ ] My company did not provide any of the benefits listed above
16. Rate the following statements *

*Mark only one oval per row.*

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courses taken in my degree program up until this point adequately prepared me for my co-op position</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During my co-op I was given the opportunity to apply skills and knowledge learned in the classroom to real world problems and scenarios.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My employer provided adequate on the job training to further prepare me for my co-op position.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The work I performed as a co-op student was challenging.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My employer/supervisor provided adequate performance feedback throughout the duration of my co-op.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My supervisor was knowledgeable and professional. He/she had significant experience in the field of engineering or in the industry in which I worked.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>While working as a co-op student, I was treated like a professional employee and given responsibilities that fit my skills and experience level.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After completing a co-op, I feel that I am better prepared to enter the world of work as a full-time engineer.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
17. Approximately how many projects did you work on as a co-op student?


18. Approximately how much money did your company save as a result of the projects you worked on?


19. Positives of participating in co-op: *


20. Negatives of participating in co-op: *


VIITA

Megan Upchurch Miller

EDUCATION

Doctor of Education in Higher Education
The University of Mississippi, University, MS
May 2021; GPA: 3.82

Master of Arts in Higher Education and Student Personnel
The University of Mississippi, University, MS
May 2014; GPA: 3.72

HIGHER EDUCATION EXPERIENCE

Assistant Dean of Undergraduate Programs (December 2020-Present)
The University of Mississippi School of Engineering, University, MS

- Coordinates scholarship administration activities to include: review of scholarship applications, preparation of scholarship budgets, decisions regarding allocation of funds, selection of recipients, and serves as liaison with the Office of Financial Aid. Serves as financial administrator (officer?) of the School of Engineering Scholarship Committee
- Develops and manages the co-op program and serves as a liaison with industry for career fairs and on campus recruiting events. Advises students on career/co-op matters, interview preparation, and resume review, etc.
- Instructor for C OP 300 responsible for maintaining BlackBoard course, managing assignments, communicating with students throughout the academic semester, and assigning final grades
- Manage co-op scholarships throughout work terms and upon return to a full academic semester
- Serves as advisor to the Engineering Study Body Leadership Council and provides oversight and guidance to student organizations within the school
- Co-instructor for ENGR 400: Leadership and Professionalism in Engineering
- Serves as a liaison with Career Center on placement and graduate tracking. Promotes job opportunities to students and advises students regarding resume and interview skills
- Oversees the planning and execution of the semi-annual Engineering, Manufacturing, and Technology Career Fair and the VIP Career Fair Program.
- Work with the Career Center to recruit company representatives and advertise with students
- Seeks new relationships with employers to aid in placement, graduate tracking and alumni relations
- Supervise and train graduate student and student workers to assist with daily tasks and projects within the Undergraduate Programs Office
• Serves as a member of the School of Engineering communications team to develop marketing materials and implement tools to aid in student recruitment, corporate partners and alumni engagement
• Coordinate annual student award presentation and selection process for all school-wide awards
• Collaborate with Development Officer to plan and execute annual scholarship event for Engineering Scholars and donors
• Serve as co-director of new student orientation programs for incoming freshmen and transfer students
• Coordinates advising activities, advises students on course schedules, and works with students to develop an academic plan according to their selected degree program as needed to support Bachelor of Engineering students

Career Planning Specialist (January 2016-December 2020)
The University of Mississippi School of Engineering, University, MS
• Managed the School of Engineering Cooperative Education Program and serve as instructor for COP 300
• Worked with administration to update co-op policies and make participation accessible to all students
• Coordinated the Career Fair VIP Program, which provides incentives for early professional development
• Co-taught ENGR 400: Engineering Leadership, a course on ethics and professional development
• Assisted in the coordination of commencement activities and final plans and preparations
• Worked with Engineering Advisory Board Members to improve student experiences within the school
• Responsible for developing and maintaining relationships with employers and companies
• Provided students with resources to prepare resumes, cover letters, and job applications
• Conducted mock interviews for students as they prepare for job interviews
• Collaborated with the University Career Center to coordinate Career Fairs and campus interviews
• Advised students applying for internships, co-ops and full time employment

Admissions Counselor (July 2014-December 2015)
The University of Mississippi School of Pharmacy, University, MS
• Scheduled campus visits for prospective students, families and guests
• Communicated with high school teachers, counselors and administrators to schedule meetings, college fairs, and classroom presentations at high schools, community colleges and universities
• Advised students in the selection of classes for the upcoming semester
• Planned events hosting prospective students, families, alumni and guests
• Evaluated applications to determine admission to the Early Entry Pharmacy Program
• Coordinated the School of Pharmacy Ambassador Program to assist with recruitment efforts
• Organized Applicant Days for prospective student interviews
• Maintained relationships with employers seeking to hire pharmacy students
• Taught one section of EDHE 105: The First Year Experience for Pre-Pharmacy Students
Graduate Assistant of Job Location and Development (August 2012-May 2014)
The University of Mississippi Career Center, University, MS
- Advised students on topics pertaining to career and graduate school preparation
- Assisted students in successfully locating off campus part time jobs
- Coordinated volunteers for on campus career fairs and events
- Collected and enter data from student and employer evaluations of career fairs and events
- Planned, organized, and implemented outreach events for career services including presentations and special events
- Conducted mock-interviews with students preparing for job and graduate school interviews
- Organized new worker orientations for incoming graduate assistants and student workers
- Monitored and oversaw the job performance of 5 student workers

EDHE 105 (The First Year Experience) Instructor (Fall 2013, 2015)
The University of Mississippi, University, MS
- Responsible for the planning of classroom activities, lectures and assessments
- Coordinated guest speakers and class programming
- Served as a mentor for students during the first semester of their college experience
- Developed lessons to aide students in a successful transition from high school to college
- Reported absences, and grades to the Center for Student Success and First Year Experience

Department of Campus Programming Practicum Student (Spring 2013)
The University of Mississippi, University, MS
- Assisted Student Activities Association in planning campus wide events including concerts, community service events, and Welcome Week Activities
- Promoted activities on campus and the community by contacting local employers and students
- Organized team building activities for the annual Student Activities Association retreat to foster teamwork and understanding of peers

OTHER WORK EXPERIENCE
Sales Associate (October 2007-December 2015)
Turkoyz Jewelry and Gift Gallery, Oxford, MS
- Merchandised jewelry and assist customers with product selection
- Managed cash register, maintain inventory, and prepare orders for shipment
- Worked with management to develop advertising campaigns and plan special events

Counselor and Tennis Instructor (Summers 2009, 2011, 2012)
Kanakuk Kamps, Branson, MO
- Developed activities to teach tennis techniques to children age 7-11
- Responsible for the safety, discipline and care of children
- Worked with parents and Kanakuk leadership to ensure a safe environment for campers

PROFESSIONAL ASSOCIATIONS AND CERTIFICATIONS
Student Personnel Association
President (April 2013-April 2014)
- Oversaw the organization and implementation of events and activities
- Worked with executive board members and faculty advisors to secure funding and support
• Promoted professional networking and community within the organization
  Professional Development Committee (August 2012-April 2013)
• Collaborated with committee members to develop programming beneficial to student affairs professionals
• Developed presentations and lectures to promote networking, interview skills, resume preparation and other topics related to the job search and professional development

Student Affairs Administrators in Higher Education (NASPA)
NCDA Career Development Facilitator (January 2014)
Mississippi Association of Colleges and Employers

ACTIVITIES, HONORS, AND COMMITTEE MEMBERSHIPS
PULSE Leadership Conference Planning Committee
Career Services Council
Industry Engagement Council
Intern Coordinators Network Steering Committee
Who’s Who Selection Committee
Delta Gamma Fraternity, Alpha Psi Chapter – Communications and Public Relations Advisor
Search Committee Memberships: Department of Biomedical Engineering Program Manager, Center for Manufacturing Excellence Faculty, University Career Center Advisor
The Ole Miss Alumni Association
Who’s Who Among American College Students
Chancellor’s Honor Roll